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DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
JOSEPH A. HOLMES, DIRECTOR

ANALYSES OF COALS IN THE UNITED STATES

WITH DESCRIPTIONS OF MINE AND FIELD
SAMPLES COLLECTED BETWEEN
JULY 1, 1904, AND JUNE 30, 1910

BY

N. W. LORD

WITH CHAPTERS BY

J. A. HOLMES, F. M. STANTON

A. C. FIELDNER, AND

SAMUEL SANFORD

Part I.—Analyses



WASHINGTON
GOVERNMENT PRINTING OFFICE
1913

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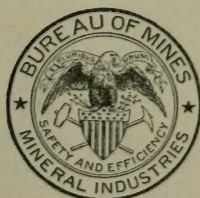
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Part I.—Analyses



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NOTE.

This report consists of two parts, namely:

Part I. Analyses of coals in the United States (pp. 1-321).

Part II. Descriptions of mine and field samples collected between July 1, 1904, and June 30, 1910 (pp. 323-1158).

A general table of contents, a preface, and an introduction appear in Part I. Part II contains an index, a list of Bureau of Mines publications, and a bibliography.

First edition. June, 1913.

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PREFACE.

By JOSEPH A. HOLMES.

The establishment on July 1, 1910, of a National Bureau of Mines on a permanent basis, and the transfer, for continuance under this bureau, of the fuel investigations organized and conducted, 1904 to 1910, under the United States Geological Survey, were considered as making a suitable occasion for assembling for publication in convenient form a description of those investigations, the methods followed, the equipment used, and the results obtained. The larger part of the data was assembled in three reports, of which the first (Bulletin 13), on the fuel tests made in gas producers, and the second (Bulletin 23), on the fuels tested in boiler furnaces, have been published. The present report, which gives the chemical analyses of the coals tested and a statement regarding the mines and beds from which these coals were collected, is the third of the group.

Much of the material has already been published in various bulletins of the Geological Survey, but most of those bulletins are now out of print and some of the material has not yet been published. Hence, it was deemed wise to bring together all the information, both published and unpublished, that may have special value and to publish it in convenient form. A résumé of certain additional data covering the briqueting of the fuels tested will be similarly segregated and published in a future bulletin of the Bureau of Mines.

When Congress authorized this work in 1904, the Director of the United States Geological Survey placed its supervision under a committee consisting of E. W. Parker and M. R. Campbell, of the Geological Survey, and the present writer. This committee selected as its consulting experts Prof. Robert H. Fernald, then of the mechanical-engineering department of Washington University, St. Louis, to take charge of the gas-producer investigations; Prof. Lester P. Breckenridge, then of the mechanical-engineering department of the University of Illinois, to take charge of the boiler and steaming investigations; and Prof. Nathaniel W. Lord, then of the chemical department of the Ohio State University, to take charge of the chemical work.

In planning the fuel investigations, the committee found that there were limitations as to equipment available; no satisfactory methods

had been developed; and few experts had been adequately trained for such investigations. Nevertheless, it was believed that, if properly carried on, the results of these investigations would have a large and permanent value. Therefore, the coals used in the investigations were selected and collected in such manner as to insure their being representative of actual and extensive resources.

During 1905 and subsequent years the administrative supervision of these investigations was assigned by the Director of the Geological Survey to the present writer, but the technical advice of Profs. Lord, Breckenridge, and Fernald was followed throughout, and the administrative plans developed during the work of 1904 so largely by Messrs. Parker and Campbell, with whom the writer was associated, have continued to serve as a general guide.

ANALYSES OF COALS IN THE UNITED STATES.

By N. W. LORD.

INTRODUCTION.

SIGNIFICANCE AND VALUE OF ANALYSES OF COAL.

The value to an engineer, power-plant superintendent, or coal dealer of the chemical analysis of a sample of a given coal is a matter that has given rise to much discussion. The general weight of opinion seems to be that an analysis is often of the highest value, and that the time and labor involved in making it are well spent. However, it is clear that analyses are of greater value to some engineers or users of coal than to others; and that, at the present time, they can not entirely supplant in all cases the information to be obtained from carefully conducted tests in boiler furnaces, gas producers, etc., but supplement such information, when the latter is obtainable.

A large and increasing proportion of the bituminous coal consumed in the power stations and the larger manufacturing plants of the country is now being purchased under specifications based on chemical analyses and calorimetric determinations of heat units. In many of these cases, however, specifications are applied to coals whose general behavior in the furnace is already known and are used with a view to determining whether, or how closely, the quality of the various deliveries of coal received from time to time compares with the percentages of moisture, ash, sulphur, volatile matter, and the heating value specified in the contract. The large increase in the number of chemical analyses now being made throughout the country in connection with the purchase, under some form of specification, of coal for power plants is in itself testimony by the engineers in charge of those power plants of the value of such analyses.

The cost of shipping coal a considerable distance in sufficiently large quantities for practical boiler tests and the difficulties and delays incident to the making of such tests while a power plant is in active operation have encouraged the use of chemical analysis as a quicker and cheaper means of determining the relative values of different coals and of different shipments of the same coal. The acceptance of and payments for deliveries of coal to various power and heating plants operated by the Government in different parts

of the country are now largely based upon chemical analyses and calorimetric determinations.

In the testing of coals in the Government service the chief difficulties in the way of accepting or rejecting untried coals on the basis of chemical analyses alone have proved to be as follows:

(1) An ordinary analysis of a coal shows the percentage of ash but does not indicate the extent to which this ash may fuse or slag on the grate bars of the furnace, and thus seriously interfere with the rate and completeness of the combustion. Though progress has been made toward the determination of the liability to clinker, through a study of the composition of the ash, the results obtained are not as yet altogether satisfactory.

(2) There seems to be a variability in the heating value of the volatile matter in the coal, which is not clearly indicated by the percentage of the volatile matter, as determined either by the usual methods, or by the ordinary calorimetric determinations.

(3) The caking of the surface coal in the fire box appears to interfere with the draft, and hence, with the rate and completeness of the combustion, and therefore impairs the fuel value of the coal to a degree that is not ordinarily indicated by chemical analyses.

The Bureau of Mines has endeavored to ascertain the opinions of some of the most prominent fuel engineers in this country, and extracts from the statements of several of them are given below.

W. M. F. Goss, Urbana, Ill., dean of the college of engineering of the University of Illinois, states:

The engineer each year is becoming more and more a scientist. Many matters which he has hitherto left to chance are now carefully investigated. In the use of fuels the engineer now seeks to construct his furnace and to arrange its heat-absorbing surfaces with reference to the peculiar characteristics of the fuel which is to be burned. If he understands the composition of his fuel and if he is free to proceed with the construction of his furnace with reference thereto, efficient and smokeless combustion will result. It is for this reason that data showing the analyses of typical fuels in every part of the country will prove of inestimable value in the future work of the engineer.

W. L. Abbott, Chicago, Ill., chief operating engineer of the Commonwealth Edison Co. of Chicago, Ill., expresses the following views:

It is usually the case that for any particular market the choice of coal is limited by quality and freight rates to one or two fields, throughout which the character of the coal in the bed is comparatively uniform, and any variation which may be found in the shipments at different times or from different mines is due to difference in method or care in preparation. The value, therefore, of having at hand a chemical analysis of the coal from any particular district is to have a standard to which future analyses may be compared to determine whether or not the coal is being prepared as carefully as it should be.

Such a tabulation of coal analyses is also of value to the consumer, as it enables him to determine to what other fields he should turn next for his coal if the supply from the field from which he usually gets his coal is interrupted.

The coal supply of the country involves an expenditure of hundreds of millions of dollars annually, and its importance is such as to warrant the most careful study of all its features. The basis for such a study is a knowledge of the chemical composition of the coal from each location and bed, and as the expense of obtaining such information is infinitesimal compared with the importance of the subject to which it relates, this work should be done with the greatest detail and care.

J. F. Deems, New York, general superintendent of motive power department of the New York Central lines, says in regard to the value of chemical analyses:

Where more than one kind or grade of coal is obtainable, there is little doubt that a chemical analysis is of value to any consumer, and especially to a large consumer, for the information obtained from the analysis has a large part in enabling him to make a choice of the coal. In the case of certain purposes for which coal is used, it seems to me accurate chemical analyses of the coals offered for use are indispensable.

L. P. Breckenridge, professor of mechanical engineering, Sheffield Scientific School, Yale University, expresses his views as follows:

The value of a correct chemical analysis of the various coals of the United States is of great importance to designing and operating engineers and to the fuel departments of railroads, steamship companies, and large industrial concerns. These analyses, taken with the large number of available economy tests on boilers and gas producers, make it possible for the engineer to determine in advance what fuels he may expect to burn with the greatest economy in any given locality. The wide variations in composition and heat values of coals distributed through the various States make such analyses indispensable for the designers of fuel-burning furnaces for boilers, gas producers, or metallurgical industries.

The analyses published in this report cover samples of coal collected in many different parts of the country with unusual care by experienced men, in such manner as to make them representative of extensive beds of coal. These samples were forwarded to the laboratory under favorable conditions and carefully analyzed by chemists trained in this special line of work. When many of these analyses were made it was not expected that the results would be published; but the calls from all parts of the country for this information have been so numerous that publication of the analyses is deemed advisable. It is hoped that the analyses as printed in this report will be found useful not only by officers of the Government in making purchases of fuel for public use, but also by engineers and chemists and by all persons who buy or sell coals purchased or sold in the United States, and that they may prove of especial value in connection with the export of coal to other countries.

ACKNOWLEDGMENTS.

The compilation of the analyses presented in this volume was done for the most part by men connected with the coal-inspection service of the United States Geological Survey and of the Bureau of Mines, under the direction of J. S. Burrows and G. S. Pope. A. C. Fieldner had charge of checking the analyses. M. R. Campbell, of the Geological Survey, gave valuable aid.

SCOPE OF THIS BULLETIN.

On July 1, 1910, the fuel-testing investigations that were being carried on by the technologic branch of the United States Geological Survey were transferred to the Bureau of Mines. Up to that date 10,000 samples of coal had been analyzed. Many of the analyses have been printed in various publications of the survey and of the Bureau of Mines. This bulletin presents analyses of mine and car samples only, and does not contain the analyses of the various samples taken in the course of steaming, gas producer, coking, washing, and briquetting tests. The analyses of these test samples may be obtained by consulting the publications dealing with fuel testing that have been issued by the Bureau of Mines and the Geological Survey. A list of these publications is given at the end of part II of this report.

COLLECTION OF SAMPLES.

The samples of coal mentioned in this report may be separated into two classes: (1) Those collected in mines by engineers connected with the Government fuel-testing plants or taken from cars after delivery at the fuel-testing plants, and (2) samples collected by geologists of the Geological Survey in the course of investigations in the various coal fields of the country.

The method of collecting mine samples that is practiced by the Bureau of Mines has been described in one of the bureau's publications,^a and is summarized in part II of this bulletin. It involves selecting a representative face of the bed to be sampled; cleaning the face, making a cut across it from roof to floor, and rejecting or including impurities according to a definite plan as these are included or excluded in mining operations; reducing the gross sample, by crushing and quartering, to about 2 pounds; and immediately sealing the 2-pound sample in an air-tight container for shipment to the laboratory.

It is expected that in future work 3-pound samples will be collected and sent to the laboratory for analysis.

The carload lots of coal shipped to the fuel plants were sampled by taking definite quantities of coal at regular intervals from a car as it was unloaded, and by reducing to convenient size, about 2 pounds, the gross samples thus obtained.

ANALYSIS OF SAMPLES.

The methods used in analyzing the samples of coal and the significance of the results are discussed by Stanton and by Fieldner in the chapters that follow. The essential fact to be remembered is that

^a Technical Paper 1, The sampling of coal in the mine, by J. A. Holmes. 1911. 12 pp.

the coal received at the laboratory is air dried at a temperature slightly above that of the room, and this air-dried coal is analyzed. Therefore the values stated in the table of analyses (pp. 33 to 321) for coal "as received," "moisture free" and "moisture and ash free" were not obtained directly, but were calculated from the values obtained by the analyses of the air-dried coal.

RELATIONS OF MINE SAMPLES TO COMMERCIAL SHIPMENTS.

The relation between a mine sample of coal and the average of the coal shipped from the same bed in the regular course of production is a matter that received much attention during the course of the work covered by this report. Some results of a comparison of the analyses of samples collected in the progress of the work at St. Louis were presented in a bulletin of the Geological Survey,^a but the work done since then does not tend to support the view, expressed in that bulletin, that by sampling according to a prescribed method such a definite relationship can be established between mine samples and commercial shipments that by the use of a factor the chemical constituents of the commercial output from a given bed, or even from a given region, may be calculated.

Experience has demonstrated that mine samples carefully taken according to prescribed methods are apt to indicate coal of slightly better grade than the average commercial shipments from the same mine.

The reason for this difference is easily found. The miner, being paid by the ton, shovels up the coal in a hurry, and is liable to load out impurities that the trained collector would be inclined to exclude from a mine sample. Moreover, if the roof chips and falls on exposure, or if the floor comes up in flakes under the shovel, impurities that are not from the coal bed are sent to the surface with the coal. The proportion of the impurities separated at the surface depends on the closeness of the tippie inspection, which may vary with trade conditions, and on the efficiency of whatever cleaning devices are employed.

The fact that mine samples are apt to indicate coal of slightly better grade than average commercial shipments should be borne in mind by operators and sales agents when bidding on contracts that specify the ash content, heating value, or other characteristics of the coal to be delivered, and impose a penalty on the delivery of coal below the standard named. Bids on such contracts should not be based solely on mine samples but on samples from shipments of some size, mined and prepared under conditions that can be maintained during the life of a contract.

^a U. S. Geol. Survey Bull. 316, 1908, pp. 486-517.

LABORATORY METHODS.^a

By FREDERIC M. STANTON.

INTRODUCTORY STATEMENT.

A laboratory for analyzing fuels was organized by the United States Geological Survey in 1904. This laboratory was first located in the metal pavilion at the Louisiana Purchase Exposition, St. Louis, Mo. At that time it was a part of the Government fuel-testing plant, and was designed for making chemical analyses of the fuels tested at the plant.

The laboratory was equipped under the direction of N. W. Lord, professor of metallurgy in Ohio State University, Columbus, Ohio. E. E. Somermeier, assistant professor of metallurgy in Ohio State University, had local charge of the laboratory until September, 1905. He then resumed his university duties, but still retained general supervision of the work of the laboratory, which was under the local charge of F. M. Stanton. In the summer of 1907 the laboratory came under the immediate charge of the technologic branch of the Survey and was moved from St. Louis, Mo., to the Carnegie technical schools, in Pittsburgh, Pa. Prof. Lord was retained as consulting chemist and F. M. Stanton was given charge of the laboratory.

In 1908, the laboratory was moved to the grounds of the United States Arsenal at Fortieth and Butler Streets, Pittsburgh, Pa., where one of the arsenal buildings was remodeled to accommodate it. In July, 1909, A. C. Fieldner was placed in local charge of coal analysis. As many as 10 chemists have at times been at work simultaneously.

PERSONNEL.

The following list includes the names of all who had been directly connected with the chemical laboratory up to July 1, 1910: John Birdsong, J. H. Bauer, D. I. Brown, G. A. Burrell, John Crawford, jr., A. T. Davenport, E. M. Dawson, jr., Fred Deering, C. D. Dunnington, Colby Dill, J. D. Davis, John Dalton, D. J. Demorest, A. C. Fieldner, C. B. R. Fitzwilliam, C. K. Glycart, Max Hecht, S. S. Heide, R. T. Hapgood, Harold Isenberg, W. W. Karnan, Prof. N. W. Lord (director of laboratory), Joseph Millenson, John McCalip, C. J. Monahan, B. G. Macintire, W. L. Maclaskey, L. L. A. Moran, F. K. Ovitz, J. W. Peters, Charles Rowlands, John Sherrer, E. E. Somermeier, F. M. Stanton, W. E. Surbled, G. O. Spitler, Roy Steward, E. Sohn, John

^a For a discussion of details and modifications developed since the compilation of this report, see Technical Paper 8, Bureau of Mines, Methods of analyzing coal and coke, by F. M. Stanton and A. C. Fieldner, 1913.

F. Travis, Edward Thomas, R. E. Vennum, K. M. Way, Paul Wilson, E. C. Waters, G. E. Webster, R. C. Willis, jr., Robert Zaloudek.

AIR DRYING OF SAMPLES.

The coal samples are received at the laboratory in cans which contain about 2 pounds of coal. The cans are fitted with a screw cap and are made practically moisture tight by wrapping a piece of electrician's tape around the joint between the cap and the top of the can. The coal is crushed to pass a screen with $\frac{1}{2}$ -inch mesh before it is shipped to the laboratory. Immediately after the receipt of the sample the coal is removed from the container and weighed; then it is spread out in a 9-inch tin cake pan and dried in a large drying oven at a temperature of 30 to 35° C. A current of warm air is drawn through the oven by means of an ordinary 8-inch electric fan mounted in an exhaust flue on top of the oven. The sample is dried until the loss in weight between two successive weighings made 6 to 12 hours apart does not exceed 0.2 per cent. The primary purpose of this air drying of samples before analysis is to get the moisture content of the sample reduced to such a condition that there will not be rapid changes in the weight of the sample during the course of the analysis. The air-drying loss is not regarded as an accurate determination; it simply shows that the sample lost so many per cent of moisture before it came to a condition of equilibrium with respect to the moisture in the air of the room.

After being air-dried, the sample is put through a pair of 4-inch rolls, which reduce it to about 10 mesh: it is then quartered through riffles until the portion left weighs about 400 grams. This 400-gram portion is placed in the porcelain jar of an Abbe ball mill, and is sealed air and moisture tight by a rubber gasket under the lid. The mill is revolved at the rate of 1 revolution per second for about 35 minutes depending upon the character of the sample; it is then opened and the sample is dumped into a 60-mesh sieve that has a cover and a pan bottom attached. All the sample (400 grams) is put through this 60-mesh sieve and is then thoroughly mixed.

About 60 grams of the sample is transferred to a wide-mouth bottle having a rubber stopper and labeled with the laboratory number and the date. This 60-gram portion represents the 2-pound sample received and is ready for chemical analysis.

The samples from the steaming, gas-producer, coke-oven, and other tests are received at the laboratory in covered galvanized-iron cans containing about 40 pounds of coal. Each of these samples is reduced to $\frac{1}{4}$ -inch mesh by being passed through a "chipmunk" jaw crusher, and after being quartered to a portion weighing about 2 pounds, is treated exactly as a mine sample received in a 2-pound can.

METHODS OF ANALYSIS.

The methods employed in analyzing coals during the period covered by this report were essentially those adopted and recommended by the American Chemical Society. A few modifications in details of manipulation have been found desirable. Reference to these is made in United States Geological Survey Bulletin 323 and in Technical Paper 8, Bureau of Mines. The methods employed at present in the chemical laboratory of the Bureau of Mines are as follows:

MOISTURE AND ASH.

A 1-gram sample of the coal (60 mesh) is placed in a weighed porcelain crucible and heated one hour at 105° C. in a constant-temperature oven through which a current of dry, preheated air is circulated. The sample is then covered, removed from the oven and cooled in a desiccator over sulphuric acid. The loss in weight is counted as moisture.

The oven is a double-walled copper cylinder. The space between the outer and inner wall is filled about two-thirds full of a solution of glycerin in water, the proportions of water and glycerin being such that the boiling solution maintains a temperature of 105° C. in the oven. The specific gravity of this solution is 1.19 at 15° C. A return condenser keeps the concentration nearly constant. A current of air is dried by being drawn through sulphuric acid and is preheated by being passed through a copper tube around the oven between the outer and the inner wall. This dry air is forced through the oven at a rate sufficient to replace the total volume of air 8 to 10 times in one hour. This form of bath was designed by Prof. N. W. Lord. Practically no trouble is experienced in maintaining a constant temperature with it.

The porcelain capsule, after the moisture determination, is placed in a muffle furnace and slowly heated until the volatile matter in the sample is driven off. The heating is done slowly, to avoid coking and thus making the sample difficult to burn; furthermore, if the coal is high in volatile matter and is rapidly heated, the gas generated has a tendency to explode within the capsule, thus causing the loss of particles of the ash. The ignition in the muffle is continued, the ash being occasionally stirred, until all particles of carbon disappear. The crucible containing the ash is then cooled in a desiccator and weighed. The crucible and ash are again placed in the muffle, heated for half an hour, cooled in a desiccator, and weighed. If the change in weight is less than 0.5 milligram, the weight is considered as constant and the weight of the crucible is deducted from the last weighing. If the change is greater than 0.5 milligram, the ash is ignited again for 30 minutes and weighed, and the process is repeated until the variation in weight between two successive ignitions is 0.5 milligram

or less. The weight of the crucible and ash, minus the weight of the crucible, is taken as the weight of the ash.

In the analysis of coals high in iron some difficulty is often experienced in igniting to constant weight because of the oxidation and reduction of iron compounds.

Ash, as determined by the above method, represents the ignited mineral matter in coal. This mineral matter consists largely of hydrated silicates, carbonates, sulphides, sulphates, etc., of aluminum, iron, calcium, magnesium, and other bases; all of these compounds lose considerable weight upon ignition. The alterations in the mineral matter during the determination of ash cause corresponding variations in the oxygen percentage, because the latter is always determined by difference.

VOLATILE MATTER.

A 1-gram sample is weighed into a 30-c. c. platinum crucible with a close-fitting cover. It is essential that the crucible be kept perfectly clean and well burnished. The crucible is heated for seven minutes upon a platinum triangle over a Bunsen burner flame 20 centimeters high.^a The crucible should be placed in the triangle so that the bottom is 6 to 8 centimeters above the top of the burner. The flame is surrounded by a jacket to prevent the disturbing action of drafts. After being heated seven minutes the crucible is cooled and weighed. The loss in weight represents volatile matter plus moisture. Lignites high in moisture must be heated very gradually until the moisture has been driven off in order to avoid losses from material thrown out of the crucible by the rapid escape of moisture.^b

A number of experiments have been made in the laboratory of the Bureau of Mines to ascertain the accuracy of the official method for the determination of volatile matter and the conditions of manipulation that may vitiate the results.^c Some of these results are summarized as follows: Two laboratories, though they both use the official method, are liable to make volatile matter determinations that differ 2 per cent. The percentage of volatile matter obtained from the same sample of coal varies with the temperature and rate of heating. This is not sufficiently defined by height of flame. Temperatures ranging from 760 to 890° C. may be attained with a 20-centimeter natural gas flame, by varying the gas pressure from 1 to 13 inches of water; variations of 2 per cent in volatile matter determinations are thus produced. Difference in type and size of burner influence results from 0.3 to 1.5 per cent. Polished crucibles

^a For the use of a Meker burner, and other refinements in the volatile matter determination, see Technical Paper 8, Bureau of Mines, 1913.

^b For a discussion of such losses, see U. S. Geol. Survey Bulletin 323, p. 36.

^c Fieldner, A. C., and Davis, J. D. Some variations in the official method for the determination of volatile matter in coal. *Jour. Ind. and Eng. Chem.*, July, 1910, p. 304.

become hotter and yield about 1 per cent more volatile matter than dull gray ones.

Laboratories using natural gas are apt to get results on volatile matter that are considerably lower than those obtained by laboratories using coal gas, unless the following precautions are observed:

1. Gas should be supplied to the burners at a pressure of not less than 10 inches of water.

2. When natural gas is used burners admitting an ample supply of air should be used.

3. Gas and air supply should be regulated so that a flame with a short, well-defined inner cone is produced.

4. The crucibles should be supported on platinum triangles and kept well polished.

NITROGEN.

Nitrogen is determined by the well-known Kjeldahl method. One gram of the coal sample (60 mesh) is boiled with 30 cubic centimeters of concentrated sulphuric acid and 0.5 gram of mercury until all particles of coal are oxidized and the solution is nearly colorless. Crystals of potassium permanganate are added, a few at a time, until oxidation is completed. The solution is cooled and then diluted with about 200 cubic centimeters of water. Forty cubic centimeters of potassium sulphide solution, 80 grams per liter, is added to precipitate the mercury. The ammonia is distilled from the solution, after the addition of an excess of sodium hydroxide, until about 200 cubic centimeters of distillate has passed over into the Erlenmeyer flask containing the standard acid. The ammonia is collected in a measured amount of this acid, and the excess of acid is titrated with standard ammonia solution (20 c. c. NH_4OH solution = 10 c. c. H_2SO_4 solution = .05 gram nitrogen), using cochineal as an indicator. A small quantity of granular zinc added to the contents of the flask during the final distillation of the alkaline solution prevents bumping, and the addition of a piece of paraffin the size of a pea prevents frothing.

SULPHUR.

Sulphur is determined by the Eschka method. Eschka mixture is made by thoroughly mixing 2 parts of light calcined magnesium oxide (MgO) with 1 part of anhydrous sodium carbonate (Na_2CO_3).

A 1-gram sample of the coal (60 mesh) is thoroughly mixed in a 30-cubic-centimeter platinum crucible with about 2 grams of Eschka mixture, and about one-half gram of Eschka mixture is spread over the top of the sample to form a cover. The crucible is placed on a triangle in a slanting position, and the mixture is burned out over

an alcohol, gasoline, or natural gas flame. Artificial gas, as a rule, contains so much sulphur that its use introduces an error in the determination, owing to the uncertainty regarding the quantity of sulphur taken up by the mixture. The flame must be very low at the start so as not to drive off the volatile matter fast enough to allow the sulphur to escape unburned. The contents of the crucible should never be heated hot enough to cause the blackening of the cover of Eschka mixture. It is easy to detect a very small loss of sulphur dioxide (SO_2) by the odor.

After the crucible has been heated slowly and cautiously for about 30 minutes the heat is increased; after the crucible becomes red hot the contents are stirred occasionally and the heating is continued until all black particles are burned. The crucible is then allowed to cool; the contents are transferred to a 200-cubic-centimeter beaker and digested with 75 cubic centimeters of hot water for at least 30 minutes. The solution is filtered into a 300-cubic-centimeter beaker; the residue is washed twice with hot water by decantation, and after transfer to the filter paper, is washed with small quantities of hot water until the volume of solution in the 300-cubic-centimeter beaker is about 200 cubic centimeters. About 4 cubic centimeters (or a slight excess) of saturated bromine water and just enough concentrated hydrochloric acid to make the solution slightly acid are added. The solution is boiled and the sulphur is precipitated as BaSO_4 by adding 20 cubic centimeters of a hot 5 per cent solution of barium chloride. The solution in the beaker should be stirred continually and the barium chloride solution should be added slowly from a pipette. The chemist should be sure that the solution in the beaker is acid to litmus. The solution and precipitate should be allowed to stand at a temperature just below boiling for at least two hours. They should then be filtered on ashless filter paper and washed—first with hot water containing 1 cubic centimeter of hydrochloric acid per liter and then with hot water—until a drop of the filtrate gives no precipitate from silver nitrate solution. An excess of barium chloride should be tested for by adding a few drops of sulphuric acid solution to the filtrate. The precipitate is ignited in a weighed porcelain crucible with free access of air; the paper is loosely folded over the precipitate to prevent spattering. The paper should be smoked off gradually, and the final heating should not be above a dull red. After the paper is completely burned, the heating should be continued a few minutes; then the crucible should be cooled and weighed. The weight of barium sulphate times 13.7 equals the percentage of sulphur in the sample.

ULTIMATE ANALYSIS.

The ultimate analysis of samples is made in a gas-combustion furnace, Glazer type, with 25 burners.

The apparatus used comprise duplicate purifying trains, a combustion tube in the furnace, and an absorption train. The purifying trains contain the following purifying reagents arranged in the order of the passage of air or oxygen through them: Sulphuric acid, potassium hydroxide solution, soda lime, and granular calcium chloride. One of the trains is for air and one for oxygen. In the scrubbing bottles containing the sulphuric acid and the potassium hydroxide the air and oxygen bubble through about 5 millimeters of the reagent. Both purifying trains are connected by a Y-tube to the combustion tube, the joint being made tight with a rubber stopper.

The combustion tube, of hard Jena glass, has an internal diameter of about 15 millimeters, and a total length of 1 meter. The first 30 centimeters of the tube is empty, then comes an asbestos plug (acid washed and ignited); the next 40 centimeters is filled loosely with copper oxide wire; a second asbestos plug, similar to the first, separates this wire from 10 centimeters of fused lead chromate, which is held in place by another asbestos plug 20 centimeters from the end of the tube. The end of the tube is drawn out so that it can be connected to the absorption train by rubber tubing. The absorption train consists, in order, of a Marchand tube filled with granular calcium chloride (to absorb moisture); a Liebig bulb, containing 30 per cent potassium hydroxide solution in which the iron has been oxidized by a little potassium permanganate. A guard tube, containing soda lime and granular calcium chloride, is attached to this Liebig bulb to absorb any carbon dioxide that passes the potassium hydroxide solution, and any water evaporated from that solution. This guard tube is always weighed with the Liebig bulbs. The train is connected to an aspirator which draws the products of combustion through the entire train. The suction is kept constant by a Mariotte flask. A guard tube containing calcium chloride prevents moisture from running back into the absorption train.

Aspirating the gases instead of forcing them through the train has the advantage that the pressure on the rubber connections is from the outside and the connections are kept gas tight more easily. The connections are made as tight as possible. The usual test for tightness is to start aspiration at the rate of about three bubbles of air per second through the potash bulb and then close the inlet for air and oxygen at the other end of the train. If there are not more than five bubbles per minute in the Mariotte flask the apparatus is considered tight.

After the train has been idle some hours, or after any changes in chemicals or connections, a blank is run; about 1 liter of air is aspirated through the train which is heated in exactly the same manner as if a determination were being made. If the change in weight of the Liebig bulb and the tube containing calcium chloride is less than 0.5 milligram the apparatus is in condition for use.

A 0.2-gram sample of coal is weighed into a platinum or porcelain boat. The boat and sample are placed in a glass weighing tube that is closed with a stopper to prevent moisture changes. After the absorption tubes are connected the boat and sample are transferred from the weighing tube to the combustion tube. The latter should be cool for the first 30 centimeters; the copper oxide should be at a bright-red and the lead chromate at a dull-red heat. The boat should be transferred from the weighing to the combustion tube as quickly as possible.

As soon as the boat is in place (near the asbestos plug at the beginning of the copper oxide) the stopper connecting with the purifying train is inserted and the aspiration is started with pure oxygen gas at the rate of three bubbles per second. One burner is turned on about 10 centimeters back from the boat and the aspiration is continued carefully until practically all the moisture is expelled from the sample. The heat is then increased very gradually until all the volatile matter has been driven off. In driving off the volatile matter it is essential that the heat be applied gradually in order to prevent a too rapid evolution of gas and tar that may either escape complete combustion or may be driven back into the purifying train. The heat should be gradually increased by turning on more burners under the empty part of the tube until the sample is ignited; then the temperature can be increased rapidly, but care should be taken not to melt the combustion tube. The aspiration with oxygen is continued for two minutes after the sample ceases to glow, when the heat is turned off and about 1,200 cubic centimeters of air is aspirated. The absorption bulbs are then disconnected and weighed. The increase in weight of the Liebig bulbs times 136.36 equals the percentage of carbon. The increase in weight of the calcium chloride tube times 55.55 equals the percentage of hydrogen. The ash in the boat is weighed and carefully inspected for any unburned carbon which would destroy the value of the determination.

DETERMINATION OF CALORIFIC VALUE.

The apparatus used is the Mahler bomb calorimeter, which is too well known to require a detailed description. Following is a brief description of the details of operation for determining the heating value of coal.

A 1-gram sample of coal is placed upon an asbestos mat in the bottom of the platinum tray; the terminals of the firing circuit are connected by means of a fine iron wire weighing about 13 milligrams. This iron wire is bent down so as to touch the coal sample in the tray. The tray is then placed in the bomb and the lid screwed down tightly against the lead gasket. Oxygen is forced into the bomb until the manometer recording the pressure within the bomb reads 18 to 20 atmospheres. The needle-point valve is then closed just tight enough to prevent leakage of gas. The oxygen must be admitted very slowly to avoid blowing any particles of coal dust out of the tray. With some extremely light materials, such as peat, it is best to briquet the sample and take a weighed portion of broken briquets instead of powdered material.

The bomb filled with oxygen is placed in the brass bucket, which contains about 2,400 cubic centimeters of distilled water, this bucket having been previously placed in the insulated jacket. The stirring apparatus is adjusted so that it touches neither bucket nor bomb. The thermometer is inserted until its bulb is about 5 centimeters from the bottom of the bucket and is in contact with no metal parts of the apparatus. The terminals of the bomb are connected with wires leading to the switch. After the stirrer has been in motion for about a minute—that is, after the water has been thoroughly mixed—the first reading of the thermometer is taken by means of a telescope attached to a cathetometer. The thermometer is graduated to 0.01°C .

The total time required for a determination may be divided into three periods—the preliminary period, the combustion period, and the final period. The preliminary period usually requires five readings taken one minute apart, or until the rate of change per minute is nearly constant. After taking the fifth reading the current, 75 volts, is turned on for about one-half second. This is the beginning of the combustion period. The first two readings in this period are taken one-half minute apart because the change in ratio is great. The temperature rises to a maximum and then begins to fall; after its rate of fall becomes uniform, the readings are taken every minute for five or six minutes. The final reading of the combustion period is the first reading taken after the rate of fall becomes uniform.

The following figures are from an actual determination and show the method of calculating the result and the corrections applied:

Method of calculating from calorimeter readings.

[Sample No. 10743. Weight 1.0000.]

<i>Time.</i> p. m.	<i>Readings.</i> °C.			
1.54	23.874	0.0058 rate of change		26.463°
.55	23.879	in preliminary period		23.897
.56	23.885		Observed temperature change	2.566
.57	23.892		Thermometer correction	.002
.58	(T) 23.897	+ ^a 0.0058		2.564
		+ ^b 0.0027	Heat loss	0.0066
.58½	24.160	+ ^a 0.0049		2.5706
		+ ^b 0.0014	Water equivalent	.3000
.59	25.430	+ ^a 0.0008	Total heat developed (calories)	7,711.8
		- ^b 0.0006	Correction	41.4
.60	26.280	- ^a 0.0020	Heat developed by combustion of sample (calories)	7,670.4
2.01	26.439	- ^a 0.0025		
		- ^b 0.0026		
.02	26.463	- ^a 0.0026		
		- ^b 0.0026		
.03	26.466	- ^a 0.0026		
		- ^b 0.0026		
		- 0.0066 algebraic sum.		
.04	<i>t</i> 26.463			
.05	26.460			
.06	26.458			
.07	26.455	- 0.0026 rate of change in final period.		
.08	26.454			
.09	26.450			

Calories.

=19.0

Wire burned=11.2 mg.

Titer (1 c. c.=5 cal.), 2.5 c. c.

=12.5

Sulphur (0.01 gm.=13 cal.), 0.76 gm. = 9.9

Room temperature=24° C.

If A equals the rate of change during the preliminary period and B equals the rate of change during the final period, then A-B equals the change in rate during the combustion period.

If T equals the initial temperature of the combustion period and *t* the final temperature of the combustion period, then T-*t* equals the apparent change in temperature during the combustion period.

Then $\frac{A-B}{T-t}$ = the change in rate per degree of temperature change during the combustion period.

Let the temperature readings during the combustion period be represented by t_1, t_2, t_3 , etc., or in general by t_n , then the computed rate per minute of temperature change at each reading is found by the following formula:

$$A - (t_n - T) \frac{A - B}{T - t}$$

^a Computed rate per minute of temperature change at each reading.^b Temperature correction for heat loss during each interval.

The temperature correction for heat loss during each interval is found by multiplying the mean of the computed rate per minute of temperature change for any two readings by the interval in minutes. The algebraic sum of these temperature corrections for heat loss equals the total correction for heat loss; this in the example given is -0.0066°C . This quantity is added to the observed temperature change (corrected for errors in the thermometer), and this sum multiplied by the weight of the water plus the water equivalent of the apparatus gives the total heat developed. Further corrections must be made for heat due to the formation of aqueous nitric acid and sulphuric acid and to the combustion of the iron wire. The correction for iron wire is 1.7 calories per milligram. The correction for sulphur burned to sulphuric acid is 13 calories per centigram. The correction for nitrogen to aqueous nitric acid is made by titrating the bomb liquor with standard ammonia solution (0.00574 gram NH_3 per c. c.). This solution is equivalent to 5 calories per cubic centimeter.

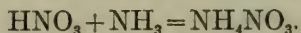
After the combustion of the coal in the calorimeter, the bomb is washed out thoroughly. The washings are titrated with standard ammonia solution (0.00574 gram per c. c.), methyl orange being used as an indicator. The acidity is due to the formation of nitric acid from the nitrogen of the coal and the nitrogen of the air in the bomb and to the sulphuric acid formed from the combustion of the sulphur in the coal. The sulphur can be easily determined by precipitation as barium sulphate. It is convenient to make the ammonia solution of such strength that 1 cubic centimeter is equivalent to 0.00473 gram of nitrogen, for this weight of nitrogen burned to N_2O_5 plus water generates 5 calories of heat. The figures are derived as follows:

The calorific value of nitrogen burning to N_2O_5 + water is 1,058 calories per gram.

$$1,058 \text{ calories} : 5 \text{ calories} = 1 \text{ gram} : 0.00473 \text{ gram.}$$

Therefore 0.00473 gram nitrogen generates 5 calories of heat when burned to aqueous HNO_3 .

The ammonia solution is made up according to the equation:



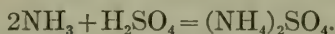
Since $\text{N} = 14$ and $\text{NH}_3 = 17$,

$$14 : 17 = 0.00473 \text{ gram} : 0.00574 \text{ gram.}$$

Therefore 0.00574 gram NH_3 is equivalent to the nitrogen which when burned to aqueous HNO_3 generates 5 calories of heat. The standard solution contains 5.74 grams of NH_3 per liter. The solution, when used to titrate the bomb liquor after the combustion of a coal

sample, must satisfy not only the nitric acid formed but also any sulphuric acid resulting from the combustion of the sulphur in the coal.

The strength of the ammonia solution in terms of sulphur in the form of sulphuric acid is determined by the following equation:



Since $2\text{NH}_3 = 34$ and $\text{S} = 32$,

$$34 : 32 = 0.00574 \text{ gram NH}_3 : 0.0054 \text{ gram S.}$$

The heat of combustion of sulphur to aqueous H_2SO_4 is 4,450 calories per gram of sulphur. In the ordinary combustion of coal under a boiler the sulphur burns to sulphur dioxide (SO_2), the heat of formation of which is 2,250 calories per gram of sulphur. The difference between these two calorific values (4,450 calories minus 2,250 calories) is 2,200 calories per gram of sulphur. The calorific value of a coal is determined to indicate the heat generated by that coal when burned under a boiler, and therefore it is necessary to make a correction in the calorimeter determinations, the difference in the calorific values due to the sulphur compounds formed, of 2,200 calories per gram of sulphur. One cubic centimeter of the ammonia solution is equivalent to 0.0054 gram of sulphur; 0.0054 times 2,200 equals 11.9 calories, the heat correction to be made if all the acidity of the liquor from the bomb represented H_2SO_4 .

Hence the ammonia solution containing 0.00574 gram NH_3 per cubic centimeter is equivalent to 5 calories for nitrogen converted to aqueous nitric acid or to 11.9 calories for sulphur converted to aqueous H_2SO_4 . A further correction, therefore, must be applied for the sulphur that is determined separately. This correction is a function of the difference between the value of the ammonia solution in terms of sulphur (11.9 calories), and its value in terms of nitrogen (5 calories) or 6.9 calories. The difference, 6.9, divided by 0.0054, the value of 1 cubic centimeter of ammonia solution in grams of sulphur, equals 12.76 calories per gram of sulphur, or 13 calories for each per cent of sulphur.

Thus the correction for total acidity equals the number of cubic centimeters of NH_3 solution multiplied by 5 (the factor for nitric acid) plus the percentage of sulphur multiplied by 13.

STANDARDIZATION OF THE CALORIMETER.

The first factor to be considered in calorimetric work is the correct determination of the water-equivalent value of the apparatus. This may be determined by a number of methods, as follows:

1. By adding the products of the weight of the different parts of the apparatus times their specific heat.

2. By generating heat within the bomb by passing a measured electric current through a known resistance.

3. By adding definite weights of water at different temperatures to the system and noting the corresponding temperature changes.

4. By varying the quantity of water surrounding the bomb and keeping the heat generated within the bomb constant.

5. By the combustion of a substance of known calorific value.

The bombs used in the Pittsburgh laboratory of the Bureau of Mines are standardized by the first and fifth methods.

STANDARDIZATION BY METHOD OF SPECIFIC HEATS.

Bomb No. 411 was standardized by the first method. The water equivalent value, 516, was derived in the manner shown below:

Standardization of calorimeter by method of specific heats.

	Weight (grams).	Specific heat.	Water equivalent.
Steel.....	3,946.4	$\times^a 0.1097$	= 432.92
Brass.....	732.9	$\times^a 0.093$	= 68.16
Lead, mercury, platinum.....	81.6	$\times^a 0.0324$	= 2.64
Enamel.....	20.0	$\times^b 0.2045$	= 4.09
Glass.....	11.5	$\times^c 0.1988$	= 2.29
Oxygen.....	14.0	$\times^a 0.2175$	= 3.05
Water.....	3.0	$\times 1$	= 3.00
			<hr/> 516.15

The standardization of a Mahler bomb calorimeter by the above method is rather unsatisfactory, because of the difficulty in accurately weighing all the parts. In fact, it is possible only to estimate the weights of such parts as the enamel. The immersion of the parts is another factor of considerable importance. Certain parts of the bucket, stirrer, and bomb are not completely immersed.

The water equivalent value obtained by this method was used to check the value obtained by the fifth method, the combustion of a substance of known calorific value.

STANDARDIZATION BY COMBUSTION OF MATERIAL OF KNOWN CALORIFIC VALUE.

The writer regards the determination of the water equivalent value of the calorimeter by the combustion of definite weights of substances of known calorific value as the most satisfactory method of standardization.

The following substances were used: Naphthalene, calorific value 9,660; benzoic acid, calorific value 6,322; and cane sugar, calorific value 3,959.

^a Stohman.

^b Louguinine.

^c Landolt and Bornstein.

The average of 15 determinations with naphthalene, benzoic acid, and sugar gave 500 as the water equivalent of the calorimeter; 2,500 grams of water were added to the calorimeter so that the total water and water equivalent value of the apparatus was equivalent to 3,000 grams of water.

The average of four determinations on sucrose (supplied by the Bureau of Standards) having a calorific value of 3,957.6 calories per gram was, with this calorimeter, 3,955 calories per gram.

The average of nineteen determinations on benzoic acid (Kahlbaum's) was 6,336 calories per gram.

The calorific value of a number of substances is given in the following table:

Calorific value of various substances.

Substance.	Calorific value (calories per gram).	Authority.
Benzoic acid.....	6,322	Sherman and Snell.
Do.....	6,322	Atwater and Snell.
Do.....	6,322	Stohman.
Do.....	6,322	Berthelot.
Do.....	6,333	Fischer and Wrede.
Do.....	6,325	Roth.
Do.....	6,330	(Recommended by Bureau of Standards.)
Camphor.....	9,290	Atwater and Snell.
Do.....	9,292	Stohman.
Do.....	9,288	Berthelot.
Cane sugar.....	3,959	Sherman and Snell.
Do.....	3,959	Stohman.
Do.....	3,962	Berthelot.
Do.....	3,959	Tower.
Do.....	3,957	Fischer and Wrede.
Do.....	3,952	Roth.
Do.....	3,958	(Recommended by Bureau of Standards.)
Hippuric acid.....	5,664	Atwater and Snell.
Do.....	5,668	Stohman.
Do.....	5,659	Berthelot.
Naphthalene.....	9,692	Berthelot.
Do.....	9,628	Stohman.
Do.....	9,660	Atwater and Snell.
Do.....	9,640	Roth.

The values used by Atwater and Snell are averages of the Stohman and the Berthelot values.

IGNITING THE FUEL WITHIN THE BOMB.

The sample is ignited by an electrically heated iron-wire fuse mounted between two platinum terminals. The accompanying diagram (fig. 2) shows the electrical connections when the current is derived from a 220-volt direct-current circuit. The iron-wire fuse is in series with a lamp bank of sixteen 16-candlepower incandescent

lamps. A second resistance of about 14 ohms is shunted across the heating coil. The purpose of the shunt is to reduce the voltage across the terminals of the heating coil after the coil is fused, and, consequently, to reduce the leakage of current between the terminals, which are partly immersed in the water surrounding the bomb. Observations made immediately after the fusing of the coil show that the electromotive force of the current at the terminals is 75 volts and the strength of the current is 0.0052 amperes. The insulation resistance is, therefore, 14,400 ohms.

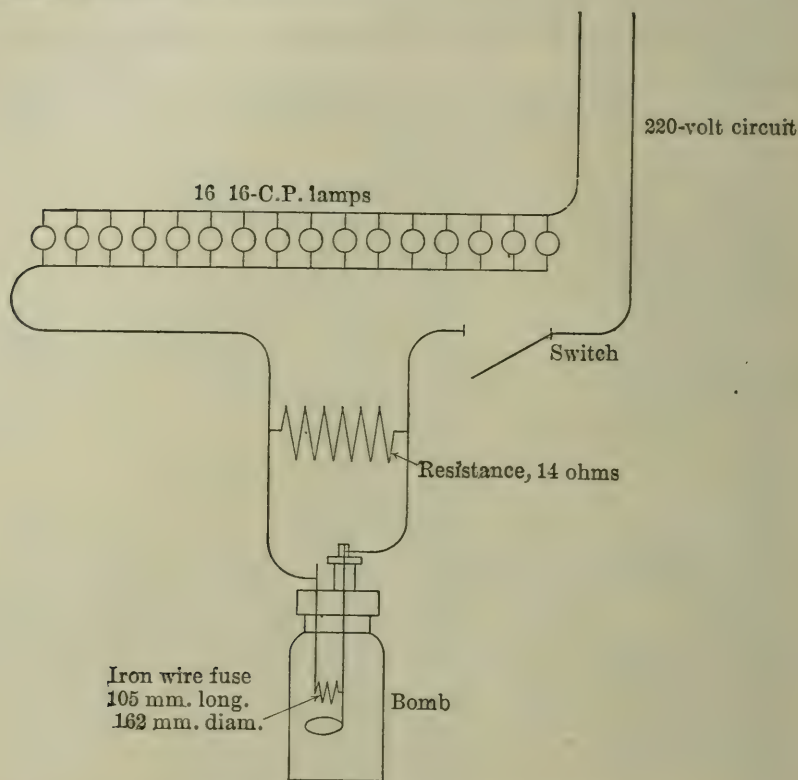


FIGURE 1. Electrical connections for fuse in calorimeter.

The water used in the calorimeter is changed twice each day, and not more than 10 determinations are made with the same water. In heating the iron wire-fuse the circuit is never closed for as long a time interval as one second; consequently, the heat imparted to the system by the passage of the current through the water is so small as to be negligible. If E equals the electromotive force, I the strength of the current, and t the time in seconds, then the heat generated by an electric current is equal to $0.239 EIt$. Substitution of the above readings gives $0.239 \times 75 \times 0.0052 = 0.09$ calories per second—the quan-

tity of heat generated per second by the electric current that passes through the bomb and water after the wire fuse is burned.

It is difficult to calculate the heat generated by the current in passing over the iron-wire fuse before the latter burns, because the resistance of the iron differs at different temperatures. However, the heat from this source is practically a constant for each determination.

The following table shows the quantity of energy dissipated by the circuit through the wire fuse as the number of lamps in the circuit is increased:

Heat dissipated by wire fuse of calorimeter.

Number of lamps in circuit.	Current passed.			Heat dissipated.
	<i>Volts.</i>	<i>Amperes.</i>	<i>Watts.</i>	<i>Calories per second.</i>
2.....	1.00	.41	.41	.10
3.....	1.03	.63	.65	.15
4.....	1.13	.85	.96	.23
5.....	1.26	1.06	1.34	.32
6.....	1.67	1.27	2.12	.51
7.....	1.99	1.46	2.91	.69
8.....	2.77	1.66	4.59	1.10
9.....	3.86	1.86	7.18	1.72
10.....	12.50	1.88	23.54	5.63
11 ^a				

^a Fuse wire burned.

The following shows the time required for the burning of the wire fuse when the number of lamps in the circuit is varied:

Time required for burning wire fuse of calorimeter.

Number of lamps in circuit.	Time required (seconds).
10 (wire does not burn).	
11.....	7.8
12.....	1.4
13.....	1.2
14.....	1.0
15.....	.8
16.....	less than .5

CALCULATION OF RESULTS.

For convenience in comparing the analyses, the results have been figured to different bases of comparison and are given for "coal as received," "moisture free" or "dry coal," and "coal, moisture and ash free." No claim is made that any of these results actually represent the so-called "pure coal" or "true coal substance."

"Pure coal" is a much-mooted question. It is difficult, if not impossible, to determine just how much of the ash and sulphur are in chemical combination with organic matter and form part of the "pure coal substance." Coal analyses reduced to the "moisture and ash free" basis are convenient for comparison and undoubtedly represent a close approximation to the "pure coal substance."

The calculations to the different bases of comparison are made according to the following formulas:

Calculation from "air dried" to "as received" condition.

"Air dried" condition.

"As received" condition.

Moisture at 105° C.	$\times \frac{100 - \text{air dry loss}}{100} + \text{air dry loss}$	=moisture.
Volatile matter	$\times \frac{100 - \text{air dry loss}}{100}$	=volatile matter.
Fixed carbon	$\times \frac{100 - \text{air dry loss}}{100}$	=fixed carbon.
Ash	$\times \frac{100 - \text{air dry loss}}{100}$	=ash.
Sulphur	$\times \frac{100 - \text{air dry loss}}{100}$	=sulphur.
Hydrogen	$\times \frac{100 - \text{air dry loss}}{100} + \frac{\text{air dry loss}}{9}$	=hydrogen.
Carbon	$\times \frac{100 - \text{air dry loss}}{100}$	=carbon.
Nitrogen	$\times \frac{100 - \text{air dry loss}}{100}$	=nitrogen.
Oxygen	$\times \frac{100 - \text{air dry loss}}{100} + \frac{8(\text{air dry loss})}{9}$	=oxygen.
Calorific value	$\times \frac{100 - \text{air dry loss}}{100}$	=calorific value.

Calories $\times 1.8 = \text{B. t. u.}$

Du Long's formula for calculating the heat value from the ultimate analysis is as follows:

$$\text{Weight carbon} \times 8,080 + \left(\text{weight hydrogen} - \frac{\text{weight oxygen}}{8} \right) \times 34,460 + \text{weight sulphur} \times 2,250 = \text{calories per gram.}$$

Calculation from "air dried" to "moisture free" condition.

"Air dried" condition.

"Moisture free" condition.

Volatile matter	$\times \frac{100}{100 - \text{moisture}}$	=volatile matter
Fixed carbon	$\times \frac{100}{100 - \text{moisture}}$	=fixed carbon
Ash	$\times \frac{100}{100 - \text{moisture}}$	=ash
Sulphur	$\times \frac{100}{100 - \text{moisture}}$	=sulphur
Hydrogen ($-\frac{1}{9}$ moisture)	$\times \frac{100}{100 - \text{moisture}}$	=hydrogen
Carbon	$\times \frac{100}{100 - \text{moisture}}$	=carbon
Nitrogen	$\times \frac{100}{100 - \text{moisture}}$	=nitrogen
Oxygen ($-\frac{8}{9}$ moisture)	$\times \frac{100}{100 - \text{moisture}}$	=oxygen
Calorific value	$\times \frac{100}{100 - \text{moisture}}$	=calorific value

The analyses are calculated to the "moisture and ash free" basis by taking $100 - (\text{moisture} + \text{ash})$ as a divisor and proceeding otherwise exactly as in the calculation to the "dry coal" basis.

EXPLANATION AND INTERPRETATION OF ANALYSES.

By A. C. FIELDNER.

The analyses given in the following table are arranged in the manner thought to be the most convenient for ready reference. The coal-producing States, the counties, and the places at or near which the samples were collected are printed in alphabetical order. Thus the first sample in the table is under Alabama, Bibb County, and the location is given as "Belle Ellen, Youngblood bed," showing that the coal came from a mine working in the Youngblood bed, at or near Belle Ellen, Bibb County, Alabama. The descriptions of the situation of the points at which samples were taken in mines are believed to need little explanation. The term "cut" or "length of cut" refers to the thickness of the coal sampled, not the thickness of the bed. The term "waste sample" signifies that the sample represented coal not included in commercial shipments at the time of sampling.

The third column in the table shows the kind of sample, whether mine or car. The term "mine sample" refers to the small samples collected from the bed by representatives of the United States Geological Survey; the term "car sample" refers solely to the samples collected from cars of coal shipped to St. Louis by inspectors of the fuel-testing plant for tests in a large way.

The numerals in the fourth column of the table, headed "condition," refer to the ways of reporting each analysis: 1 signifies that the sample is figured on coal "as received," and shows the analysis corrected for the entire amount of moisture found in the sample; 2 refers to analysis on the "moisture-free" basis; 3 refers to the analysis on a "moisture and ash free" basis; 4 refers to the analysis calculated to a "moisture, ash, and sulphur free" basis.

PROXIMATE ANALYSIS.

In a proximate analysis the chemist determines important or technically known parts of a material, as moisture or ash. The term proximate does not signify that such an analysis is only approximately correct. With sufficient care the determinations of a proximate analysis may be closely duplicated provided the determinations are always made under exactly similar conditions.

MOISTURE.

The water in coal is usually classed under two heads: (a) Loosely retained or mechanically held moisture, such as is present in coal

that has been rained on; (b) moisture retained by coal that has reached an air-dry condition. The main reason for air drying coal in the laboratory is to bring the coal into a condition that permits the making of the analysis with greatest convenience and accuracy. The extent to which coal dries varies with the temperature of the air, the humidity, and the fineness to which the coal is crushed.

A sample of coal that is air dried at ordinary temperatures until it does not lose weight retains moisture that is given off when the temperature rises. The proportion of this more tenaciously retained moisture is determined by heating the finely powdered air-dried sample in air at a temperature slightly above the boiling point of water. It is considered that one hour's heating at 105° C. (221° F.) expels all the free or loosely held water in coal. In the table the percentage of moisture given in the analysis for the "as received" condition represents all the moisture removed from the sample.

VOLATILE MATTER AND FIXED CARBON.

In the proximate analysis of coal, volatile matter and fixed carbon are determined by heating a finely powdered sample of the coal in a crucible, under prescribed conditions, for exactly 7 minutes. The volatile matter comprises combustible gases, some inert gas, and the water formed by the decomposition of the coal, but does not include the water removed from the coal by drying at a temperature of 105° C. The weight of the coke left in the crucible, less the weight of the ash, is reported as "fixed carbon." The weight of the fixed carbon does not represent all the carbon in the sample of the coal, as a considerable quantity of carbon combined with hydrogen is driven out in the volatile matter; furthermore, the fixed carbon is not pure carbon, but contains hydrogen, sulphur, oxygen, and nitrogen. It should be clearly understood that the term "volatile matter" or "volatile combustible matter" does not signify a definite compound that was in the coal before it was heated. Different degrees or rates of heating will give more or less volatile matter.

DIFFERENCES IN VOLATILE-MATTER DETERMINATIONS.

Volatile matter determinations made in different laboratories may not agree closely, even though each laboratory conforms to the method recommended by the American Chemical Society. This method prescribes the size of the flame, but does not consider the variations in flame temperature resulting from differences in the composition of the gas used and in the pressure at which it is supplied to the burner. Hence the volatile matter, and consequently the fixed carbon, determinations published in this bulletin are not directly comparable throughout, because the work was done in three

different laboratories, under four different sets of conditions. In making comparisons, the determinations should be considered in four groups, as follows:

Group 1, laboratory Nos. 1 to 5146, inclusive. These determinations were made in the St. Louis laboratory, where gasoline gas was used for fuel.

Group 2, laboratory Nos. 5147 to 7100, inclusive. These determinations were made while the laboratory was in the Carnegie Technical Schools, Pittsburgh, Pa., where natural gas was used as fuel. There is no record of the pressure at which the natural gas was supplied to the burners, but this pressure was probably about 10 inches of water.

Group 3, laboratory Nos. 7101 to 9120, inclusive. These determinations were made after the removal of the laboratory to its present site, Fortieth and Butler Streets, Pittsburgh, Pa., where natural gas has been used for fuel. During the period of the determinations in this group, the low pressure of the gas at the burners gave much trouble. The pressure fluctuated between $1\frac{1}{2}$ and 5 inches of water, apparently varying with the demands of certain industrial establishments that were taking gas from the same main.

Group 4, laboratory Nos. 9121 and over, were analyzed under the same conditions as group 3, except that the pressure of the gas at the burners was kept at 10 to 14 inches of water. With the use of the Tyrell burner and a polished platinum crucible a temperature of about 880° C. was maintained in the interior of the coke, at a point about 2 millimeters from the bottom of the crucible.

Comparisons of analyses of samples of coal from the same mine show that the volatile matter and the fixed carbon determinations of group 1 and group 4 agree fairly closely; the variations are both plus and minus and as a rule within 1 per cent. The determinations of group 3, however, are distinctly lower in volatile matter and higher in fixed carbon than are those of group 1 and of group 4. The differences are about 3 per cent for low-volatile semibituminous coals and anthracite, and decrease gradually, as the volatile matter in the coal increases, to about 1 per cent for bituminous coals. The volatile matter determinations made while the laboratory was in the Carnegie Technical Schools (group 2) fall about midway between the determinations at the St. Louis laboratory (group 1) and those made with natural gas under low pressure (group 3).

The volatile matter of some lignite and subbituminous coal samples, designated in the table of analysis by an asterisk (*), was determined by the modified official method. These samples were given a preliminary heating of 4 minutes over a small flame, and a final heating of 7 minutes over a flame 20 centimeters high.

ASH.

Ash represents the mineral impurities left after burning coal. The weight of ash, however, is usually slightly less than the original weight of the mineral matter in the coal. The sources of ash are: (1) Mineral matter intimately mixed with the coal substance; and (2) layers of shale or "slate," pyrites nodules, etc., in the coal bed.

The percentage of ash from the first source is fairly uniform in different parts of the same bed. The percentage of ash from the second source varies considerably, dependent on the number and thickness of the partings and the care with which these are separated from the coal in mining. Coal ash is composed largely of silica, alumina, iron, and lime. The silica and alumina are derived chiefly from sand, clay, and shale in the coal bed; the iron oxide from iron pyrites; and the lime from carbonate and sulphate of lime. An ash with a high percentage of iron and lime is easily fusible and is likely to clinker badly in a furnace.

ULTIMATE ANALYSIS.

In an ultimate analysis of coal the chemist determines the proportions of carbon, hydrogen, oxygen, nitrogen, sulphur, and ash in the sample. These determinations, with the exception of the oxygen, may be made with a fair degree of accuracy.

CARBON AND HYDROGEN.

Carbon and hydrogen are the most important constituents of the more combustible matter and the chief heat-producing elements in coal. The proportion of hydrogen in most coals is less than 6 per cent, being least in anthracite.

OXYGEN.

The proportion of oxygen is found by subtracting the sum of the carbon, hydrogen, nitrogen, sulphur, and ash from 100; hence the value found is affected by all errors made in the other determinations. All the oxygen in the coal is considered as being combined with the hydrogen in the ratio (1:8) to form water. Hence the hydrogen thus combined and not available for producing heat is equal to one-eighth of the oxygen; the balance of the hydrogen is considered as combined with the carbon and contributing to the heating value of the coal.

NITROGEN.

The proportion of nitrogen in coal usually averages from 1 per cent to 2 per cent. It is of interest mainly to the gas and coke manufacturer, who recovers part of the nitrogen as ammonia.

SULPHUR.

Sulphur, although classed as an impurity in coal, has a heating value when in the form of iron pyrites, of almost one-half that of the coal it replaces. For certain purposes, such as the manufacture of coke and illuminating gas, coals containing much sulphur are undesirable. Sulphur is commonly present as iron pyrites either in large lumps and bands or fine disseminated particles. It may also be present in combination with lime and magnesia as sulphates, or in combination with the coal substance as organic sulphur.

CALORIFIC POWER OR HEATING VALUE.

The calorific power or heating value of a fuel is the total amount of heat developed by the complete combustion of a unit weight of fuel. In the metric system of measurements the heat unit is the calorie. The calorie is the quantity of heat required to raise the temperature of 1 gram of water 1°C ., the water being at the temperature at which its density is greatest. In the English system the heat unit is the British thermal unit. The British thermal unit is the quantity of heat required to raise the temperature of 1 pound of water 1°F ., the water being at the temperature of maximum density, 39.1°F . Since 1 pound of a fuel will heat 1 pound of water to just the same degree that 1 gram of fuel will heat 1 gram of water, the relation between British thermal units and calories, if the weight of water and the weight of fuel are expressed in the same units, becomes that of the thermometric scales; and as a centigrade degree is nine-fifths of a Fahrenheit degree, heat values expressed as calories may be converted into British thermal units by multiplying by nine-fifths, or 1.8.

The most accurate method of determining the total heating value of coal is by burning a stated weight of it in a bomb calorimeter, as described on pages 17 and 18 of this report, and measuring the rise of temperature in a known quantity of water surrounding the bomb.

In general the heating value or calorific power of a coal is an index of its commercial value. The calorific power determined with a bomb calorimeter can not be obtained from the same coal burned in a boiler furnace, because heat is absorbed in evaporating the water in the coal and in heating to the temperature of the flue gas the products of combustion and the air supplied for combustion. These losses vary with the character of the coal and the way in which it is burned. The net heating value that remains after the subtraction of these unavoidable losses is called the "available calorific value," or the "low heating value."

SIGNIFICANCE OF THE RESULTS OF AN ANALYSIS.

The air-drying loss of a mine sample indicates to some degree the loss in weight after mining from the evaporation of loosely retained

moisture. The analysis of the coal "as received" shows the actual composition of the coal in the mine. After the coal has left the mine its moisture content lies between the limits of coal "as received," and coal "air dried." The analysis on a "moisture free" basis, represents the composition of the coal after drying at 105° C. (221° F.). The analysis stated on a "moisture and ash free" basis represents approximately the heating value and composition of the dry organic matter. This relation seems to be fairly constant for the same coal bed in certain districts, especially in the Appalachian region. Comparison of numerous analyses shows that the "moisture and ash free" calorific values of different samples from the same mine and bed usually agree closely, provided the proportion and the character of the ash and the sulphur do not vary greatly.

COMMERCIAL VALUATION OF COALS.

For the commercial valuation of coals a proximate analysis and a calorific value determination are usually sufficient. Moisture and ash are of importance; they not only displace their own weights of combustible matter, but the evaporation of the moisture wastes heat. A high percentage of ash increases the cost of handling coal in a power plant and decreases the efficiency of the furnace. The ratio of the volatile matter to the fixed carbon indicates in a way the type of furnace best adapted for burning a coal with maximum efficiency. The smokeless combustion of coal containing a low percentage of volatile matter is not difficult in furnaces of ordinary types, but to burn a high volatile coal without smoke requires a suitably designed furnace. A high percentage of sulphur is undesirable in coal used for the manufacture of coke and gas. For ordinary steaming purposes sulphur is not a serious drawback unless associated with elements, such as iron or lime, that promote clinkering.

TABULATED ANALYSES.

On the following pages are given the analyses of the samples of coal collected by the United States Geological Survey during the period covered by this report. The detailed descriptions of the samples, the geologic relations of the coal beds from which they were taken, and notes on mining conditions, preparation, and marketing of the coal are given in Part II, pages 323-1158.

Table of chemical analyses.

Locality, bed, etc.	Sample. ^a		Proximate.				Ultimate.				Calorific value.		Reference.					
	Lab- o- ratory No. ^b	Kind.	Con- d- ition.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.	British thermal units.	Bul- letin No. ^b	Page of this bulle- tin. ^c	
ALABAMA.																		
HIBB COUNTY.																		
Belle Ellen, Belle Ellen No. 2 mine, sec. 15, T. 22 S., R. 5 W., Coke or Youngblood bed (2,000 feet west of opening, north heading 8, 2½-foot cut).	9254	B	1	3.12	31.41	59.70	5.77	1.24	.....	.....	.....	.....	2.1	7,795	14,031		431	331
			2	.....	32.43	61.62	5.96	1.28	.....	.....	.....	.....		8,046	14,483			
			3	.....	34.48	65.52		1.36	.....	.....	.....	.....		8,566	15,401			
Same (2,000 feet west of opening, room 33, south heading 9, 5½-inch cut).	9255	B	1	3.16	31.05	59.56	6.23	1.20	5.33	78.28	1.37	7.59	2.0	7,856	14,141		431	331
			2	.....	32.06	61.51	6.43	1.24	5.14	80.83	1.42	4.94		8,112	14,602			
			3	.....	34.26	65.74		1.33	5.49	86.38	1.52	5.28		8,669	15,604			
3 miles north of; Cane Creek No. 2 mine, Youngblood bed (room 26 off heading 6, 900 feet northeast of slope, 34-inch cut).	3034	A	1	3.67	33.53	59.64	3.14	1.22	.....	.....	.....	.....	2.6	7,908	14,396		332	
			2	.....	34.83	61.91	3.26	1.27	.....	.....	.....	.....		8,302	14,944		13	
			3	.....	36.00	64.00		1.31	.....	.....	.....	.....		8,583	15,440		23	
Same (room 19, entry 9, 1,500 feet northeast of slope, 35-inch cut).	3035	A	1	3.60	34.08	59.86	2.46	1.30	.....	.....	.....	.....	2.4	.....	.....		332	
			2	.....	35.35	62.10	2.55	1.56	.....	.....	.....	.....		.....	.....		13	
			3	.....	36.28	63.72		1.60	.....	.....	.....	.....		.....	.....		23	
Same (run of mine).....	3103	C	1	6.43	28.56	52.09	12.92	1.08	5.23	69.07	1.18	10.52	5.5	6,886	12,395		332	
			2	.....	30.52	55.67	13.81	1.15	4.83	73.81	1.26	5.14		7,359	13,247			
			3	.....	35.41	64.59		1.34	5.60	85.64	1.46	5.96		8,538	15,378			
Blocton, 1½ miles east of; Blocton No. 7 mine, Thompson bed (cross entry 6 off east heading 14, 6½-inch bed, 57½-inch cut).	7394	A	1	3.21	32.05	60.79	3.95	.60	5.52	77.91	1.20	10.82	2.1	7,791	14,024		6	332
			2	.....	33.11	62.81	4.08	.62	5.35	80.50	1.24	8.21		8,050	14,400			
			3	.....	34.52	65.48		.65	5.58	83.92	1.29	8.56		8,392	15,106			
Same (east entry 2, room 9 off left crossheading, 60½-inch cut).	7395	A	1	3.47	32.06	59.58	4.89	.65	.....	.....	.....	.....	2.4	7,600	13,788		6	332
			2	.....	33.21	61.72	5.07	.67	.....	.....	.....	.....		7,935	14,283			
			3	.....	34.98	65.02		.71	.....	.....	.....	.....		8,359	15,046			
Garnsey, sec. 7, T. 22 S., R. 4 W., No. 1 mine, Thompson bed (east cross entry 8, 2,700 feet south of slope, 4-foot cut).	3018	A	1	3.03	30.94	55.81	10.72	.49	.....	.....	.....	.....	1.6	7,241	13,034		332	333
			2	.....	31.91	57.04	11.05	.51	.....	.....	.....	.....		7,467	13,441			
			3	.....	35.87	64.13		.57	.....	.....	.....	.....		8,395	15,111			

^a The kind of sample is denoted by letter, as follows: A=mine sample collected by an inspector of the technologic branch of the Survey; B=mine sample collected by a geologist of the Survey; C=car sample taken at the fuel-testing plant. The form of analysis is denoted by number, as follows: 1=sample as received; 2=sample dried at temperature of 105° C.; 3=moisture and ash free; 4=moisture, ash, and sulphur free.

^b Figures in roman type denote references to bulletins of the United States Geological Survey, those in heavy type to bulletins of the Bureau of Mines, and those in italics to professional papers of the United States Geological Survey.

^c Figures in outside right-hand column refer to page of this bulletin where may be found the description of the section of the bed from which the sample was taken.

* The volatile matter of samples whose laboratory number is preceded by an asterisk (*) was determined by the modified official method (see p. 29).

Same (composite of Nos. 10460, 10461, and 10465).	10464	A	1	3.77	33.40	53.79	8.98	.85	5.14	74.20	1.30	9.53	2.4	7.354	13.291	333
Same (Clark upper bed, face of left heading 2, off slope 1, 40½-inch cut).	10462	A	1	.....	38.35	51.05	9.33	.87	4.91	77.11	1.35	9.42	.....	7.673	13.811	335
.....	.....	.....	2	.....	31.87	56.51	7.06	.93	.....	.....	.....	7.08	2.8	8.403	15.233	.....
.....	.....	.....	3	.....	33.89	59.21	7.40	1.03	.....	.....	.....	.....	.....	.....	.....	.....
Same (Clark upper bed, left slope 3, off main slope, 45½-inch cut).	10463	A	1	2.80	32.96	63.94	10.43	1.12	.....	.....	.....	.....	1.4	.....	.....	335
.....	.....	.....	2	.....	32.85	53.42	10.43	1.42	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	3	.....	32.80	55.17	10.73	1.46	.....	.....	.....	.....	.....	.....	.....	.....
Same (Clark upper bed, face of slope, air course, 47½-inch cut).	10464	A	1	2.88	32.81	52.01	6.30	.79	.....	.....	.....	.....	1.2	.....	.....	335
.....	.....	.....	2	.....	34.81	57.01	6.49	.75	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	3	.....	37.23	58.77	.....	.82	.....	.....	.....	.....	.....	.....	.....	.....
Same (composite of Nos. 10462-10464).	10465	A	1	3.34	33.55	52.09	8.02	1.04	5.19	74.70	1.30	9.09	1.8	7.499	13.498	.....
.....	.....	.....	2	.....	34.72	52.98	8.30	1.08	4.99	77.35	1.34	9.54	.....	7.788	13.904	.....
Piper, Piper No. 1 mine, Thompson (or Underwood) bed (3,500 feet from opening, east heading 15, 5-foot cut).	9243	B	1	.....	37.86	62.14	.....	1.18	5.44	85.35	1.40	9.77	.....	8.400	15.228	.....
.....	.....	.....	2	3.1	35.0	51.7	6.3	.43	5.32	76.73	1.24	10.71	1.4	7.550	13.560	431
.....	.....	.....	3	.....	38.5	57.5	.....	.43	5.32	76.73	1.28	8.18	.....	7.775	14.000	.....
Same (Clark upper bed from opening, west heading 15, 56-inch cut).	9244	B	1	2.64	35.67	61.24	5.45	.39	5.47	83.97	1.37	8.72	.....	8.300	14.930	431
.....	.....	.....	2	.....	36.04	57.70	5.60	.40	.....	.....	.....	.....	.....	8.364	13.723	.....
.....	.....	.....	3	.....	38.81	61.19	.....	.42	.....	.....	.....	.....	.....	7.881	14.096	.....
.....	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8.295	14.931	.....
Lehigh, No. 2 mine, Black Creek bed (left cross entry 9, 2,000 feet south of opening, 23½-inch cut).	4090	A	1	4.72	28.69	62.45	4.14	.83	.....	.....	.....	.....	3.6	.....	.....	336
.....	.....	.....	2	.....	30.11	65.55	4.34	.87	.....	.....	.....	.....	.....	.....	.....	336
.....	.....	.....	3	.....	31.48	68.52	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Same (right entry 10, 2,100 feet south of opening, 28-inch cut).	4091	A	1	2.93	29.06	65.25	2.73	.65	.....	.....	.....	.....	1.9	8.103	14.093	332
.....	.....	.....	2	.....	29.94	67.25	2.81	.67	.....	.....	.....	.....	.....	8.410	15.137	336
.....	.....	.....	3	.....	30.81	69.13	.....	.69	.....	.....	.....	.....	.....	.....	.....	.....
Same (run of mine).	4252	C	1	5.59	25.05	53.28	16.08	1.40	4.70	46.58	1.27	9.97	4.4	9.016	11.906	332
.....	.....	.....	2	.....	26.53	56.44	17.03	1.48	4.91	70.51	1.35	9.32	.....	9.007	12.612	.....
Swansea, Fairchild mine, sec. 5, T. 14 S., R. 1 E., Swansea bed, 450 feet south of drift mouth, 57-inch cut.	2191	B	1	3.37	31.98	68.02	13.05	1.22	5.21	83.60	1.62	6.38	2.0	9.447	15.205	336
.....	.....	.....	2	.....	31.99	55.80	.....	.....	.....	.....	.....	.....	.....	7.080	12.744	.....
.....	.....	.....	3	.....	28.06	57.83	13.51	1.26	.....	.....	.....	.....	.....	7.328	13.960	.....
.....	.....	.....	4	.....	33.14	66.80	.....	1.46	.....	.....	.....	.....	.....	8.471	15.248	.....
.....	.....	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Adger, Blue Creek No. 3 mine Blue Creek bed (about 2,000 feet southeast of mouth, 84-foot cut).	1145	B	1	2.88	25.98	60.96	10.18	.94	.....	.....	.....	.....	1.8	.....	260	337
.....	.....	.....	2	.....	26.75	62.77	10.48	.97	.....	.....	.....	.....	.....	48	.....	.....
.....	.....	.....	3	.....	29.87	70.13	.....	1.08	.....	.....	.....	.....	.....	.....	.....	.....
Same, room 7, off third right heading (84½-inch cut).	1149	B	1	2.91	24.08	53.21	19.80	.70	.....	.....	.....	.....	2.2	.....	260	337
.....	.....	.....	2	.....	24.80	54.81	20.39	.73	.....	.....	.....	.....	.....	48	.....	.....
.....	.....	.....	3	.....	31.15	68.85	.....	.92	.....	.....	.....	.....	.....	.....	.....	.....
Cardiff, 1 mile west of; sec. 16, T. 16 S., R. 4 W., No. 16 mine, Nickel Plate bed (lower 15-inch bench).	1931	B	1	1.76	28.52	54.08	15.64	4.05	.....	.....	.....	.....	1.0	.....	285	338
.....	.....	.....	2	.....	29.03	55.04	15.92	4.12	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	3	.....	34.53	65.47	.....	4.90	.....	.....	.....	.....	.....	.....	.....	.....
Same (upper 17½-inch bench).	1920	B	1	2.86	29.08	65.29	2.77	.85	.....	.....	.....	.....	1.3	.....	285	338
.....	.....	.....	2	.....	29.93	67.22	.....	.98	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	3	.....	30.81	69.19	.....	1.01	.....	.....	.....	.....	.....	.....	.....	.....
Same (Pratt bed, mouth of entry 4, on face of heading 3, 39-inch cut).	1917	B	1	1.83	29.28	57.53	11.36	4.24	.....	.....	.....	.....	.9	.....	285	338
.....	.....	.....	2	.....	29.83	58.60	11.57	4.32	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	3	.....	33.73	66.27	.....	4.89	.....	.....	.....	.....	.....	.....	.....	.....
Same (right heading 5, off entry 3, 40-inch cut).	1918	B	1	2.88	29.56	56.91	10.65	2.04	.....	.....	.....	.....	1.0	7.477	13.459	338
.....	.....	.....	2	.....	30.44	58.59	10.97	2.10	.....	.....	.....	.....	.....	7.099	13.888	.....
.....	.....	.....	3	.....	34.19	65.81	.....	2.36	.....	.....	.....	.....	.....	8.647	15.565	.....

[illegible]

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.		Reference.			
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Alr- dry- ing loss.		Calo- ries.	British thermal units.	Page of this bulle- tin.
ALABAMA—Continued.																	
JEFFERSON COUNTY—continued.																	
Pinkney, Tutweiler No. 3 drift—Continued.																	
Same, Pratt bed (900 feet from main entry, right heading 9).	1932	B	1	2.27	27.00	57.70	13.03	1.79					1.4			285	345
			2		27.63	59.04	13.33	1.83									
			3		31.88	63.12		2.11									
Republic, sec. 31, T. 16 S., R. 3 W., Warner mine, Pratt bed (43-inch cut).	1755	B	1	2.51	27.10	59.96	10.43	1.68					1.6	7,571	13,628	285	346
			2		31.80	61.50	10.70	1.72						7,766	13,979		
			3		31.13	63.87		1.93						8,696	15,653	285	
Same (left heading 12, room 19, 43-inch cut)....	1756	B	1	2.68	25.17	61.82	10.33	1.86					1.8			285	346
			2		25.86	63.53	10.61	1.91									
			3		28.93	71.07		2.14									
Seloca, sec. 26, T. 14 S., R. 3 W., run of Seloca mine from car at mine, Jefferson bed.	3948	C	1	3.23	29.00	56.74	11.03	2.58	4.83	72.43	1.56	7.57	2.2	7,313	13,163		
			2		29.97	58.63	11.40	2.67	4.62	74.85	1.61	4.85		7,557	13,003		
			3		33.83	66.17		3.01	5.21	84.48	1.82	5.48		8,529	15,352	285	346
Warrior, sec. 26, T. 14 S., R. 3 W., Watt mine (Black Creek bed, 39½-inch cut).	3949	B	1	1.32	33.23	63.58	1.87	.73	5.29	83.20	1.77	7.14	.3	8,427	15,169		
			2		33.68	64.42	1.90	.74	5.21	84.31	1.79	6.05		8,540	15,372		
			3		34.32	65.63		.75	5.31	85.95	1.83	6.16		8,705	15,609	285	346
Same (Jefferson bed, 27-inch cut).....	3944	B	1	2.18	31.71	63.32	2.79	1.07	4.98	80.86	1.71	8.59	1.0	8,231	14,816		
			2		32.42	64.73	2.85	1.09	4.85	82.66	1.75	6.80		8,414	15,145		
			3		33.37	66.63		1.13	4.99	85.09	1.80	6.99	.9	8,661	15,590	285	347
			2	1.86	23.52	64.73	4.89	2.27	2.31								
			3		29.05	65.96	4.98	2.43									
Wylam, sec. 36, T. 17 S., R. 4 W., Pratt No. 4 mine, Pratt bed, 52½-inch cut (Kelso entry, room 5).	2433	B	1	1.63	30.58	64.42	3.53	.57					.8			285	347
			2		31.31	64.03	3.53	.57									
			3		31.35	65.09	3.59	.58									
Same (room 1, cross heading 6).....	2430	B	1		32.49	67.51		.60									
ST. CLAIR COUNTY.																	
Davis (Tillman station), Margaret No. 1 mine, Harkness bed, 800 feet from slope mouth, main entry, 44½-inch cut.	3484	B	1	3.39	30.69	57.08	8.84	2.34	5.18	73.81	1.53	8.30	1.8	7,424	13,363	316	347
			2		31.77	59.03	9.15	2.42	4.97	76.40	1.58	6.48		7,655	13,832		
			3		34.96	65.04		2.67	5.47	84.11	1.74	6.01		8,458	15,224		
SHELBY COUNTY.																	
Aldrich, Aldrich mine, Montevallo bed (west heading 9 just off main slope, 31-inch cut).	4339	B	1	2.39	36.01	52.50	9.10	.79	5.20	74.33	1.02	9.56	1.1	7,417	13,351	431	348
			2		36.89	53.79	9.32	.81	5.05	76.15	1.04	7.63		7,589	13,678		
			3		40.63	59.32		.89	5.57	83.98	1.15	8.41		8,350	15,084		

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.				Ultimate.				Calorific value.		Reference.							
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Alr- dry- loss.	Calo- ries.	British thermal units.	Bul- letin No.	Page of this bulle- tin.			
ALABAMA—Continued.																				
TUSCALOOSA COUNTY—continued.																				
Brookwood, Brookwood No. 10 mine, Carter bed, 35- inch bed, 34-inch cut.	1187	B	1	3.85	30.80	59.70	5.65	0.78					3.4			260	352			
			2		32.03	62.09	5.88	.81									48			
			3		34.03	65.97												400		
Brookwood No. 12 mine, Brookwood bed, 33½-inch cut, in right heading 1.	1185	B	1	2.78	28.71	52.24	16.27	1.26					2.2			260	353			
			2		29.53	53.73	16.74	1.30									400			
			3		35.47	64.53														
Same, Brookwood No. 7 mine, Milldale bed 2-foot 2½-inch cut, west entry 12.	1186	B	1	1.96	31.55	60.96	5.53	1.11					1.5	7,980	14,364	260	353			
			2		32.18	62.18	5.64	1.13												
			3		34.10	65.90	10.01	1.20										8,140	14,651	
Kellerman, central drift, Brookwood bed, 71½-inch cut.	1164	B	1	3.81	30.19	55.99	10.01	1.49					2.8	8,626	15,257	260	354			
			2		31.38	58.21	10.41	1.55										48		
			3		35.03	64.97														
Rock Castle, sec. 25, T. 20 S., R. 7 W., Rock Castle mine, Jagger bed, 500 feet from mouth, 7½-inch cut.	2539	B	1	1.73	26.37	64.96	7.06	.89					.7			260	354			
			2		28.87	71.13												400		
			3		32.36	58.15	7.14	1.37	1.3									260	355	
Searles, Searles mine, Brookwood bed, room 3 off left heading 7, 6½-inch cut.	1210	B	1	2.35	32.14	59.55	7.31	1.51					1.3			260	355			
			2		35.75	64.25												48		
			3		34.68	51.68	11.56	1.57										260	355	
Tidewater, Tidewater mine, Brookwood bed, 600 feet from drift mouth, 37½-inch cut.	1593	B	1	2.08	33.42	52.77	11.81	1.60					.8			260	355			
			2		40.16	59.84												400		
			3		23.20	64.09	9.50	1.79										260	356	
Yolande, Yolande No. 1 mine, main entry, 250 feet from mouth, Jagger 9½-inch bed, 7½-inch cut.	2543	B	1	3.21	23.97	66.21	9.82	.82					1.8			260	356			
			2		26.58	73.42												400		
			3																	
WALKER COUNTY.																				
Carbon Hill, three-fourths mile northwest of Chick- saw No. 5 mine, Jagger bed (2,000 feet from foot of slope, west entry 3 off main north entry, 53½-inch bed, 43½-inch cut).	1075	A	1	2.25	35.70	53.01	9.04	1.09							7,206	13,133	13	356		
			2		36.52	54.23	9.25	1.12									7,404	13,435	23	
			3		40.25	59.75												8,225	14,805	48
Same (1,200 feet from foot of slope, east entry 4).	1076	A	1	2.42	34.83	51.62	11.13	1.10							7,053	12,695	261	356		
			2		35.69	52.90	11.41	1.13									7,238	13,010	48	
			3		40.29	59.71												8,159	14,686	

Same (3,500 feet northeast of slope, left entry 3 off main north entry, 53-inch bed, 48-inch cut).	3011	A	1	4.71	31.80	53.32	10.17	1.33	.....	.....	.....	.....	.....	2.7	6.098	12.506	332	355
Same (3,500 feet north of slope, north entry 1 off old west entry, 44-foot bed, 403-inch cut).	3012	A	1	4.51	31.81	54.78	8.92	1.48	.....	.....	.....	.....	.....	2.4	7.344	13.219	332	356
Same (over 3-inch screen).	1225	C	3	3.36	32.88	51.33	12.43	1.01	4.64	68.69	1.54	11.49	.....	.....	8.861	12.350	261	.....
Same (run of mine).	3211	C	3	3.05	39.04	60.06	12.86	1.05	4.82	71.08	1.59	8.80	.....	.....	7.099	12.779	48	.....
Horse Creek, 14 miles west of No. 8 mine, Horse Creek bed (1,450 feet from mouth of mine, left entry 1 off right entry 3, 87-inch cut).	1077	A	1	1.22	31.53	54.44	12.81	1.71	.....	.....	.....	.....	.....	.....	8.147	14.665	332	.....
Same (1,250 feet from mouth of mine, room 24 off left entry 2, 863-inch cut).	1078	A	3	1.35	31.67	53.35	13.63	1.83	.....	.....	.....	.....	.....	.....	8.547	11.785	.....	.....
Same (over 1-inch screen).	1201	C	3	2.34	32.60	54.56	12.84	1.72	5.01	71.58	1.65	8.50	.....	.....	7.142	12.856	261	.....
ALASKA.																		
ALASKA PENINSULA.																		
Chignik Bay, Alaska Packers' Association mine, cut across clean face.	6953	B	1	7.06	31.48	39.68	21.78	1.30	4.83	55.14	0.61	16.34	.....	5.2	5.470	9.846	.....	358
Ittook Bay mine.	6952	B	3	5.07	27.24	42.42	25.27	1.83	5.70	77.50	.80	14.11	.....	4.0	5.886	10.595	.....	358
Thompson Valley, outcrop, upper bed.	6956	B	3	10.77	30.37	43.99	16.66	3.24	5.70	80.05	.62	7.46	.....	.....	5.356	9.641	.....	358
Whalers Creek mine, Whalers Creek bed.	6955	B	3	5.02	34.28	45.45	15.25	1.75	4.87	62.04	.56	15.53	.....	2.5	7.202	12.964	.....	359
Coal Harbor (Unega Island), Coal Harbor bed.	6954	B	3	23.27	25.42	25.13	26.18	2.19	5.41	77.82	.70	13.88	.....	12.5	6.574	11.835	.....	359
Herendeen Bay, Johnson Tunnel, cut across face of clean bed.	6951	B	3	8.01	33.53	51.35	7.11	1.05	5.30	68.76	1.03	23.86	.....	.....	6.547	11.785	.....	359
Same lower tunnel No. 1.	6957	B	3	7.48	32.73	52.71	12.66	.39	5.29	78.47	1.12	14.73	.....	.....	7.117	12.811	.....	360
BERING RIVER.																		
Bering Lake, tunnel on shore of, halfway between Poul Point and Dick Creek.	4427	B	1	5.14	13.90	75.96	5.00	1.16	4.50	80.68	1.38	7.28	.....	4.6	7.814	14.065	335	360

2482	B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000
South end of hillside trail, 10-foot bed.....																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											</																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.		Reference.			
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- loss.		Calo- ries.	British thermal units.	Page of this bulle- tin.
ALASKA—Continued.																	
BERING RIVER—continued.																	
Nevada Creek, tunnel near mouth of; 19-foot 7-inch bed.	2461	B	1	5.95	13.01	76.12	4.92	0.61					5.4		335	367	
			2		13.83	80.94	5.23	.64									
			3		14.59	85.41											
Powers Creek, tunnel on; 1 mile north of Bering Lake, 12-foot bed, 102-inch cut.	2493	B	1	5.84	11.74	60.21	22.21	3.36					5.1		335	368	
			2		12.47	63.94	23.59	3.57									
			3		16.32	83.68		4.67									
Queen Creek, opening near (upper 27-foot bed).....	2486	B	1	4.23	14.03	79.75	1.99	.96					3.0		335	368	
			2		14.65	83.27	2.08	1.00									
			3		14.96	85.04		1.02									
Same (lower 31-foot bed).....	2495	B	1	5.66	13.65	76.81	3.88	1.07					4.6		335	368	
			2		14.47	81.42	4.11	.82									
			3		15.09	84.91		.86									
Southwest of; opening on south branch, 17-foot cut.	2494	B	1	4.94	13.34	77.29	4.43	.83					3.9		335	369	
			2		14.03	81.31	4.66	.87									
			3		14.72	85.28		.91									
Second Berg Lake, gulch at head of; 23-foot bed.....	2485	B	1	3.74	5.41	85.92	4.93	1.10					1.9		335	369	
			2		5.62	89.26	5.12	1.14									
			3		5.92	94.08		1.20									
Tokun Creek, lower tunnel on; 63-foot bed, 80-inch cut.	2490	B	1	4.35	11.97	73.34	10.34	1.13					3.7		335	369	
			2		12.51	76.08	10.81	1.18									
			3		14.03	85.97		1.32									
Trout Creek, Cunningham's upper tunnel, opposite house, 8-foot bed.	2489	B	1	2.11	16.58	79.68	1.63	.78					1.3		284	370	
			2		16.94	81.39	1.67	.80							335	335	
			3		17.23	82.77		.81									
Tunnel, one-fourth mile below house, 33-foot bed..	2484	B	1	6.34	14.29	69.55	9.82	.64					5.4		284	370	
			2		15.26	74.26	10.48	.68							335	335	
			3		17.04	82.96		.76									
COOK INLET.																	
Kachemak Bay, north shore of (3 miles east of Homer Spit).	4457	B	1	18.12	42.77	23.61	15.50	.43	5.51	44.77	0.88	32.91	7.0	4,386	7,895	379	370
			2		52.23	28.84	18.93	.53	4.27	54.67	1.07	20.53		5,357	9,643		
			3		64.44	35.56	1.65	.65	5.27	67.45	1.33	25.30		6,608	11,694		
Same (1 mile west of Homer Spit, 6-foot bed)...	4429	B	1	18.59	36.13	34.92	10.36	.34	5.81	49.08	1.14	33.27	9.4	4,749	8,548	379	370
			2		44.38	42.89	12.73	.42	4.59	60.29	1.40	20.57		5,834	10,501		
			3		50.86	49.14		.48	5.28	69.08	1.60	23.56		6,684	12,031		

North shore of; several miles southeast of Anchor Point, three-fourth mile west of Diamond Creek; Same (1½ miles east of Troublesome Gulch)....	4426	B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
Port Graham, north shore of.....	4458	B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
Tyonek, about 4 miles south of; on west shore of Cook Inlet (near south end of Tyonek beach).	4465	B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
Same (loose lignite pebbles from a conglomerate).	4425	B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
3 miles south of; first outcrop, west shore of Cook Inlet.	4464	B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
Northwest of; on Beluga River, above canyon and rapids (10 miles up).	4434	B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
Same (10½ miles up).....	4456	B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.				Ultimate.				Calorific value.		Reference.					
	Laboratory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.		Air- dry- ing loss.	Calo- ries.	British thermal units.	Bul- letin No.	Page of this bulletin.
ARKANSAS—Continued.																		
FRANKLIN COUNTY—continued.																		
Denning, sec. 22, T. 9 N., R. 26 W., represents 3 cars (100 tons) of uninspected slack.	3798	C	1	2.91	12.65	66.93	17.51	3.12	3.60	70.88	1.17	3.72	1.7	6,840	12,312	332	
			2	.....	13.03	68.93	18.04	3.21	3.38	73.01	1.21	1.15	.....	7,045	12,680	
			3	.....	15.90	84.10	.....	3.92	4.12	89.08	1.48	1.40	.....	8,596	15,473
Sec. 22, T. 9 N., R. 26 W., No. 2 mine, Denning bed (43-inch cut).	1040	B	1	.85	14.45	76.41	8.29	2.05	326	379		
			2	.....	14.57	77.07	8.36	2.07	.....	.....	.....	.....	.....	.....
			3	.....	15.90	84.10	.....	2.26	.....	.....	.....	.....	.....	.....
Same (51-inch cut).....	1042	B	1	.84	16.46	75.32	7.38	1.91	8,136	14,645	326	379	
			2	.....	16.60	75.96	7.44	1.93	.....	.....	.....	.....	.....	8,205	14,769
			3	.....	17.93	82.07	.....	2.09	.....	.....	.....	.....	.....	8,805	15,957
JOHNSON COUNTY.																		
Clarksville, 2 miles south of; sec. 17, T. 9 N., R. 23 W., Brooks mine, Spadra bed (32-inch cut).	3369	B	1	1.72	10.46	79.50	8.32	2.49	7,704	13,867	316	380	
			2	.....	10.64	80.89	8.47	2.53	.....	.....	.....	.....	.....	7,839	14,110
			3	.....	11.62	88.38	.....	2.76	.....	.....	.....	.....	.....	8,564	15,415
Coal Hill, 1½ miles west of; No. 4 mine, Denning bed, 3½-foot cut (room 45, off east slope, entry 3).	1130	A	1	1.38	14.76	76.91	6.95	1.52	1.40	7,901	14,330	261	380	
			2	.....	14.97	77.98	7.05	1.54	.....	.....	1.42	.....	.....	8,072	14,530
			3	.....	16.11	83.89	.....	1.66	.....	.....	1.53	.....	.....	8,684	15,631
Same (room 38, east plane, entry 2).....	1131	A	1	1.80	15.00	75.94	7.26	1.94	326	380	
			2	.....	15.27	77.34	7.39	1.98	.....	.....	.....	.....	.....	.....	.....
			3	.....	16.49	83.51	.....	2.14	.....	.....	.....	.....	.....	.....	.....
Same (run of mine, 40 tons).....	1331	C	1	2.36	12.68	72.88	12.08	1.99	3.82	76.44	1.37	4.30	1.1	7,366	13,269	261	
			2	.....	12.99	74.64	12.37	2.04	3.65	78.20	1.40	2.25	.....	7,545	13,580	
			3	.....	14.82	85.18	.....	2.33	4.16	89.34	1.60	2.57	.....	8,009	15,496
2½ miles southwest of; Denning bed (3½-foot bed)...	3370	B	1	3.41	12.10	78.41	6.08	4.05	4.26	91.47	1.64	2.63	2.4	8,700	15,768	316	381	
			2	.....	12.52	81.19	6.29	4.19	.....	.....	.....	.....	.....	.....	.....
			3	.....	13.36	86.64	.....	4.47	.....	.....	.....	.....	.....	.....	.....
Spadra, Consolidated Anthracite No. 1 mine, Spadra bed (1,300 feet northeast of shaft, east entry 6, 32-inch cut).	2587	A	1	3.12	11.39	77.03	8.46	1.84	7,607	13,793	332	381	
			2	.....	11.76	79.51	8.73	1.90	.....	.....	.....	.....	.....	7,852	14,134
			3	.....	12.83	87.12	.....	2.08	.....	.....	.....	.....	.....	8,603	15,485
Same (1,650 feet northwest of shaft, west entry 8, 33-inch cut).	2588	A	1	2.72	11.20	77.71	8.37	2.78	332	381		
			2	.....	11.51	79.89	8.60	2.86	.....	.....	.....	.....	.....	.....
			3	.....	12.59	87.41	.....	3.13	.....	.....	.....	.....	.....	.....

Sample	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	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Sec. 20, T. 5 N., R. 31 W., Red Rock mine, Hartshorne bed, 36-inch cut.	3154	B	1	2.44	16.85	74.98	5.73	2.57	1.6	316
Same, Denman mine (36-inch cut),			2		17.27	76.86	5.87	2.63		326
	3163	B	3		18.35	81.65	5.79	2.79		388
			1	2.65	15.70	74.52	7.13	2.86	1.9	316
			2		16.13	76.55	7.32	2.94		326
Fort Smith, 5 miles from; Massard Prairie, sec. 30, T. 8 N., R. 31 W., Hartshorne bed, 27 to 30 inches thick.	3372	B	3	2.19	14.00	82.60	11.66	3.16	1.4	316
			2		14.31	73.77	11.92	2.11		326
Greenwood, sec. 16, T. 6 N., R. 30 W., Banner mine, Hartshorne bed, 63-inch cut.	3175	B	3	2.26	16.25	83.75	10.04	2.40	1.6	316
			1		15.79	71.91	10.04	1.20		316
			2		16.15	73.58	10.27	1.23		316
			3		18.00	82.00	9.29	1.37		316
Sec. 12, T. 6 N., R. 31 W., Greenwood No. 1 mine, lower part of mine, 72-inch cut.	3173	B	3	3.21	14.84	72.66	9.29	3.12	2.4	316
			2		15.33	75.07	9.60	3.22		326
			3		16.96	83.04	3.57	1.25		316
			4					1.29		316
			1	3.64	16.57	76.00	3.79	.83	3.0	316
Hackett, 2 miles east of; sec. 18, T. 6 N., R. 31 W., Bates & McWilliams mine, Hartshorne bed, 31-inch cut.	3157	B	2		17.20	78.87	3.93	.86		326
			3		17.90	82.10		.90		316
Sec. 21, T. 6 N., R. 32 W., Hackett City mine, 33-foot cut, Hartshorne bed.	3407	B	1	3.55	17.16	75.46	3.83	.96	2.8	326
			2		17.79	78.24	3.97	1.00		316
			3		18.52	81.48		1.04		316
Hartford, 2 miles northeast of; N.E. $\frac{1}{2}$ sec. 14, T. 4 N., R. 32 W., Patterson No. 1 mine, Hartshorne bed, 33-foot cut.	3500	B	1	4.12	18.15	69.97	7.76	.98	3.4	316
			2		18.93	72.98	8.09	1.02		326
			3		20.60	79.40		1.11		316
Huntington, 1 mile west of; No. 3 mine, Hartshorne bed (east entry 4, north side, 93-foot cut).	1045	A	1	1.02	17.88	73.61	7.49	1.10		261
			2		18.06	74.37	7.57	1.11		233
			3		19.54	80.46		1.20		261
			1	.75	18.50	73.77	6.98	1.15		316
Same (east entry 4, south side, 85-inch cut), ..	1046	A	2		18.64	74.33	7.03	1.16		326
			3		20.05	79.95		1.25		316
			1	3.53	16.65	72.04	7.77	1.29	2.9	332
Same (half mile south of shaft, east entry 7, off main south entry, 70-inch cut).	2585	A	1		17.27	74.68	8.05	1.34		336
			2		18.78	81.22		1.46		316
			3	4.00	16.82	72.04	7.14	1.32	3.5	332
Same (900 feet west of shaft, back entry, first dip, 63-foot cut).	2586	A	2		17.52	75.04	7.44	1.38		233
			3		18.93	81.07		1.49		316
Same (over $\frac{1}{2}$ -inch screen, 44 tons),	1114	C	1	3.24	17.46	66.69	12.61	1.24		261
			2		18.04	68.93	13.03	1.28	2.1	316
			3		20.74	79.26		1.47		316
Same (stack),	2689	C	4	7.49	15.16	59.38	17.97	1.06		326
			1		16.39	64.18	19.43	1.15		332
			2		20.33	75.67		1.42		316
			3		14.02	74.66	7.39	1.72	2.2	332
Jenny Lind, No. 17 mine, SW. $\frac{1}{4}$ sec. 32, T. 7 N., R. 31 W., Hartshorne bed, 72-inch cut.	3149	B	1	3.03	15.39	76.99	7.62	1.77		326
			2		16.65	83.34		1.92		316
			3	.95	17.91	71.52	9.62	2.07		326
Same (6-foot cut),	1030	B	1		18.08	72.21	9.71	2.09		316
			2		20.02	79.98		2.31		326

Same (slack, through 2-inch perforated screen).	C	2722																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.				Ultimate.				Caloric value.		Reference.			
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile car- bon- ate.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.		Calo- ries.	British thermal units.	Page of this bulle- tin.
COLORADO.																
ADAMS COUNTY.																
Lafayette, about 2½ miles east of; sec. 6, T. 1 S., R. 68 W., Parkdale mine, 200 feet east of foot of slope, close to fault, 4-foot cut (special sample to show effect of fault movement).	6832	B	1	18.85	31.11	46.18	3.86	0.27	57.47	0.99	31.23	11.4	5,506	9,911	397	
	2		2		38.34	56.90	4.76	.33	70.82	1.22	17.83		6,785	12,213		
	3		3			40.26	59.74		.35	74.36	1.23	18.72		7,124		12,823
Same (upper bench, 64-inch cut), 150 feet west of slope.	6833	B	1	19.65	30.75	43.60	6.00	.33	56.54	1.02	30.09	13.0	4,799	8,638	397	
	2		2		38.27	54.26	7.47	.41	70.37	1.27	15.70		5,973	10,751		
	3		3			41.37	58.63		.44	76.05	1.37	16.97		6,455		11,619
Same (lower bench, 44-inch cut), 150 feet west of slope).	6834	B	1	21.15	28.11	44.21	6.53	.46	55.37	.99	30.72	16.5	5,145	9,262	397	
	2		2		35.65	56.07	8.28	.58	70.21	1.26	15.13		6,525	11,745		
	3		3			38.87	61.13		.63	76.54	1.38	16.50		7,114		12,805
ARCHULETA COUNTY.																
Pagosa Springs, 12 miles northeast of; NE. ¼ sec. 36, T. 36 N., R. 1 W., Kleckner mine, 5½-foot bed.	4175	B	1	9.50	34.78	45.75	9.97	1.14				2.2			397	
	2		2		38.43	50.55	11.02	1.26								
	3		3			43.19	56.81		1.42							
BOULDER COUNTY.																
Lafayette, 1 mile southeast of; sec. 1, T. 1 S., R. 69 W., Rankin mine, 200 feet north and 200 feet east of shaft, 73-inch cut.	6840	B	1	19.15	30.82	44.27	5.76	.25	56.38	1.08	30.60	13.4	5,342	9,616	397	
	2		2		38.12	54.76	7.12	.31	69.74	1.34	16.79		6,608	11,894		
	3		3			41.04	58.96		.33	75.09	1.44	18.08		7,115		12,807
Simpson mine, lower bed (room 23, off southwest entry 23, 14-foot cut).	1383	A	1	20.02	33.81	42.56	3.61	.52		1.18		3.9	5,687	10,237	398	
	2		2		42.27	53.22	4.51	.65		1.48			7,111	12,800		
	3		3			44.27	55.73		.68		1.55		7,447	13,405		
Same (room 5, off northwest entry 4, 11-foot cut).	1397	A	1	21.84	34.00	40.68	3.48	.46				4.0			398	
	2		2		43.50	52.05	4.45	.59								
	3		3			45.53	51.47		.62							
Same (run of mine).	1523	C	1	18.68	34.88	40.45	5.99	.55	57.46	1.15	28.78	6.0	5,635	10,143	201	
	2		2		42.89	49.74	7.37	.68	70.66	1.41	14.97		6,939	12,472		
	3		3			46.30	53.70		.73	76.28	1.53	16.16		7,480		13,464
Same (run of mine).	2322	C	1	17.95	31.76	40.44	9.85	.37	76.84	1.54	16.29	7.5	5,334	9,601	201	
	2		2		38.71	49.29	12.00	.45					6,500	11,701		
	3		3			43.99	56.01		.51				7,386	13,296		

792b	A	1	2	3	3.98	30.97	4.90	3.88	30	39	398
Same (1,500 feet southwest, room 9, off entry 87, lower bed).		18.77	37.28	30.97	4.90	3.88	30	39	398	5	10.087
793b	A	2	45.90	49.20	4.90	3.88	30	39	398	5	10.087
Same (3,000 feet west, room 6, off entry 69, lower 7-foot bed).		21.08	39.35	36.16	4.32	3.41	36	40	399	5	12.418
803b	C	3	52.11	47.89	4.70	5.50	39	48	399	5	13.057
Louisville, near; sec. 8, T. 1 S., R. 69 W., Acme mine, north of fault (300 feet north and 400 feet east of shaft, 80-inch cut).	B	2	45.52	51.48	5.83	4.70	39	48	399	5	9.064
Same (800 feet south and 950 feet east of foot of shaft, 55-inch cut).	B	3	37.21	62.79	4.53	3.55	37	46	399	381	12.407
6837	B	3	37.21	62.79	4.53	3.55	37	46	399	381	12.407
6839	B	3	37.21	62.79	4.53	3.55	37	46	399	381	12.407
6835	B	3	37.21	62.79	4.53	3.55	37	46	399	381	12.407
6836	B	3	37.21	62.79	4.53	3.55	37	46	399	381	12.407
Delta County.											
Bowie, King mine, N.E. 1/4 sec. 15, T. 13 S., R. 91 W., 3 1/2 miles north of opening, room 1, first butt entry, west, 82-inch cut).	A	1	2.52	39.33	53.16	4.99	59	64	400	368	13.640
379b	A	1	4.38	40.29	50.93	4.40	61	64	400	368	13.493
Same (run of mine, 34 tons).	C	3	44.17	55.83	4.81	4.97	67	64	400	368	14.747
5533	B	3	43.24	56.76	4.81	4.97	67	64	400	368	13.379
Same (700 feet from opening, upper 2 benches, 57-inch cut).	B	3	29.16	58.38	10.32	10.32	52	59	400	341	7.433
5531	B	3	29.16	58.38	10.32	10.32	52	59	400	341	13.834
Same (700 feet from opening, lower bench, 63-foot cut).	B	3	33.30	66.70	4.37	4.37	55	58	400	341	8.088
5532	B	3	33.30	66.70	4.37	4.37	55	58	400	341	7.020
Same (500 feet from opening, lower bench, 63-foot cut, "dead" coal).	B	3	28.84	63.31	5.21	5.21	66	68	400	341	12.636
One-half mile northwest of: King mine (old workings) 700 feet from mouth, 4-foot cut.	B	3	31.30	68.70	5.35	5.35	72	72	401	341	7.103
3 miles southwest of: 3 miles north of Paola, S.W. 1/4 sec. 17, T. 13 S., R. 91 W., Cooperative mine, 300 feet in, lower bench 8 1/2 foot cut.	B	3	30.83	60.17	2.84	3.13	70	55	401	341	8.021

Table of chemical analyses—Continued.

Sample.		Locality, bed, etc.	Proximate.					Ultimate.				Calorific value.		Reference.						
			Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.	British thermal units.	Page of this bul- letin.		
COLORADO—Continued.																				
DELTA COUNTY—Continued.																				
5524	B	Cedaredge, 2 miles northeast of; SW. $\frac{1}{4}$ NE. $\frac{1}{4}$ sec. 15, T. 13 S., R. 94 W., McCruder mine, 250 feet from mouth, upper bench $\frac{1}{2}$ -foot cut.	1	9.85	32.76	43.46	13.93	1.83	.....	.....	.....	.....	.....	.....	.....	3.1	5,683	10,229	341	402
			2	.....	36.34	48.21	15.45	2.03	.....	.....	.....	.....	.....	.....	.....	.....	6,304	11,347	.....	.....
			3	.....	42.98	57.02	.....	2.40	.....	.....	.....	.....	.....	.....	.....	.....	7,456	13,421	.....	.....
5538	B	$4\frac{1}{2}$ miles northeast of; NE. $\frac{1}{4}$ SE. $\frac{1}{4}$ sec. 12, T. 13 S., R. 94 W., Ward mine, 200 feet in, $\frac{1}{2}$ -foot cut.	1	10.24	31.57	42.10	16.09	2.60	.....	.....	.....	.....	.....	.....	.....	3.0	5,589	10,060	341	402
			2	.....	35.17	46.90	17.93	.67	.....	.....	.....	.....	.....	.....	.....	.....	6,227	11,209	.....	.....
			3	.....	42.85	57.15	.....	.81	.....	.....	.....	.....	.....	.....	.....	.....	7,588	13,659	.....	.....
5525	B	$8\frac{1}{2}$ miles east of; 8 miles north of Hotchkiss, SW. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 23, T. 13 S., R. 93 W., Bennett mine, 50 feet from mouth, $\frac{1}{2}$ -foot cut.	1	13.97	31.90	43.23	12.67	.54	.....	.....	.....	.....	.....	.....	.....	4.7	5,667	10,201	341	403
			2	.....	37.08	50.25	10.90	.63	.....	.....	.....	.....	.....	.....	.....	.....	6,587	11,857	.....	.....
			3	.....	42.46	57.54	.....	.72	.....	.....	.....	.....	.....	.....	.....	.....	7,543	13,577	.....	.....
5537	B	9 miles east of; 4 miles north of Hotchkiss, SE. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 26, T. 13 S., R. 93 W., Newman mine, 240 feet in, $\frac{1}{2}$ -foot cut.	1	15.54	33.03	46.06	5.37	.58	.....	.....	.....	.....	.....	.....	.....	4.7	5,865	10,557	341	403
			2	.....	39.11	54.51	6.35	.69	.....	.....	.....	.....	.....	.....	.....	.....	6,943	12,497	.....	.....
			3	.....	41.76	58.24	.....	.74	.....	.....	.....	.....	.....	.....	.....	.....	7,414	13,345	.....	.....
5536	B	Hotchkiss, 6 miles north of; SE. $\frac{1}{4}$ SW. $\frac{1}{4}$ sec. 30, T. 13 S., R. 92 W., Burdick mine, 800 feet in, $\frac{1}{2}$ -foot cut, wet sample.	1	16.67	33.10	46.27	3.96	.47	.....	.....	.....	.....	.....	.....	.....	5.2	5,915	10,701	341	403
			2	.....	39.72	55.53	4.75	.56	.....	.....	.....	.....	.....	.....	.....	.....	7,134	12,841	.....	.....
			3	.....	41.70	58.30	.....	.59	.....	.....	.....	.....	.....	.....	.....	.....	7,490	13,482	.....	.....
5552	B	8 miles northeast of; SE. $\frac{1}{4}$ NE. $\frac{1}{4}$ sec. 21, T. 13 S., R. 92 W., Stucker mine, 50 feet in, upper bench, $\frac{1}{2}$ -foot cut, weathered.	1	22.40	31.19	42.16	4.25	.30	.....	.....	.....	.....	.....	.....	.....	8.8	4,533	8,159	341	404
			2	.....	40.19	54.33	5.48	.39	.....	.....	.....	.....	.....	.....	.....	.....	5,841	10,514	.....	.....
			3	.....	42.52	57.48	.....	.41	.....	.....	.....	.....	.....	.....	.....	.....	6,180	11,124	.....	.....
5551	B	Paonia, 3 miles northwest of; NW. $\frac{1}{4}$ SE. $\frac{1}{4}$ sec. 24, T. 13 S., R. 92 W., Conline mine, 300 feet in, upper bench, $\frac{1}{2}$ -foot cut.	1	8.90	32.61	47.05	11.44	.81	.....	.....	.....	.....	.....	.....	.....	3.3	6,174	11,113	341	404
			2	.....	35.80	51.64	12.56	.89	.....	.....	.....	.....	.....	.....	.....	.....	6,777	12,199	.....	.....
			3	.....	35.80	51.64	.....	1.02	.....	.....	.....	.....	.....	.....	.....	.....	7,551	13,952	.....	.....
5526	B	Same (lower bench, $\frac{1}{2}$ -foot cut).....	1	13.64	30.89	47.33	8.14	.68	.....	.....	.....	.....	.....	.....	.....	5.2	6,457	10,623	341	404
			2	.....	35.77	50.80	9.43	.89	.....	.....	.....	.....	.....	.....	.....	.....	6,457	11,623	.....	.....
			3	.....	35.77	50.80	.....	.79	.....	.....	.....	.....	.....	.....	.....	.....	7,129	12,832	.....	.....
5542	B	Rollins, NW. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 35, T. 13 S., R. 96 W., Rollins mine, 285 feet in, lower bench, $\frac{1}{2}$ -foot cut.	1	19.14	31.20	41.73	7.93	.93	.....	.....	.....	.....	.....	.....	.....	5.9	5,322	9,580	341	405
			2	.....	38.59	51.60	9.81	.75	.....	.....	.....	.....	.....	.....	.....	.....	6,582	11,848	.....	.....
			3	.....	42.78	57.22	.....	1.03	.....	.....	.....	.....	.....	.....	.....	.....	7,298	13,136	.....	.....
5541	B	1 mile southwest of; SE. $\frac{1}{4}$ SE. $\frac{1}{4}$ sec. 34, T. 13 S., R. 96 W., Kuhnley mine, 2,000 feet in, $\frac{1}{2}$ -foot cut.	1	17.18	30.67	41.41	10.74	.70	.....	.....	.....	.....	.....	.....	.....	5.0	5,202	9,364	341	405
			2	.....	37.03	50.00	12.97	.85	.....	.....	.....	.....	.....	.....	.....	.....	6,281	11,306	.....	.....
			3	.....	42.55	57.45	.....	.97	.....	.....	.....	.....	.....	.....	.....	.....	7,217	12,991	.....	.....
5540	B	3 miles northeast of; SW. $\frac{1}{4}$ NE. $\frac{1}{4}$ sec. 19, T. 13 S., R. 95 W., Fairview mine, 800 feet in, $\frac{1}{2}$ -inch cut.	1	16.37	29.79	45.39	8.45	.54	.....	.....	.....	.....	.....	.....	.....	4.3	5,616	10,109	341	406
			2	.....	35.62	54.28	10.10	.45	.....	.....	.....	.....	.....	.....	.....	.....	6,715	12,087	.....	.....
			3	.....	39.62	60.38	.....	.60	.....	.....	.....	.....	.....	.....	.....	.....	7,469	13,444	.....	.....

5 miles northeast of; 5 miles' northwest of Cedar- edge, SE. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 16, T. 13 S., R. 95 W., Winion mine, 500 feet in (upper bench, 4-foot cut).	5522	B	1 2 3	14.16 36.45 39.22	48.48 56.48 60.78	6.07 7.07	.68 .80 .86	5.90 5.05 5.43	61.15 71.24 76.66	1.22 1.42 1.53	24.98 14.42 15.52	4.9	6.016 7.069 7.552	10.829 12.616 13.756	341	406
Same (lower bench, 5-foot cut).....	5539	B	1 2 3	15.26 30.24 33.61	45.83 54.68 58.25	8.67 10.23	.60 .71 .79	5.87 5.92 5.48	59.24 69.84 77.88	1.11 1.31 1.36	24.51 12.92 14.39	5.5	5.780 6.821 7.859	10.404 12.278 13.678	341	406
7 miles northeast of; SW. $\frac{1}{4}$ SE. $\frac{1}{4}$ sec. 11, T. 13 S., R. 95 W., Watson mine, 200 feet in, upper bench, 34-foot cut.	5521	B	1 2 3	13.36 33.72 38.02	48.50 56.90 59.60	4.23 4.88	.56 .68	5.23 5.48 5.93	62.11 71.69 75.37	1.30 1.50 1.58	23.92 16.20 17.03	4.6	6.223 7.159 7.355	11.207 12.933 13.599	341	407
83 miles northeast of; NW. $\frac{1}{4}$ NE. $\frac{1}{4}$ sec. 13, T. 13 S., R. 95 W., States mine, 110 feet in, 77 inches of lower bench.	5523	B	1 2 3	13.57 32.58 36.11	46.17 53.41 58.61	7.68 8.89	.83 1.05	5.34 5.91 6.03	73.37 81.11 86.97	1.58 1.96 2.11	17.03 9.61 9.28	5.4	5.321 6.851 7.320	10.638 12.332 13.536	341	407
Wells Gulch, sec. 18, T. 4 S., R. 3 E., 160 feet from mouth of mine, 13-foot cut, weathered.	5534	B	1 2 3	6.53 32.85 36.21	50.95 54.51 60.09	8.67 9.28	1.19 1.31	5.19 5.63 6.09	8.27 11.19 13.31	9.67 11.19 13.31	2.1	6.078 7.103 7.103	10.949 11.705 12.902	341	408	
EL PASO COUNTY.																
Calhan, 6 miles northeast of; SE. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 27, T. 11 S., R. 61 W., Furdon mine, 214-inch cut.	7128	B	1 2 3	34.40 24.44 37.26	27.27 41.57 46.07	13.89 21.17	.14 .21	6.46 4.02 3.00	35.94 54.79 68.54	.66 1.01 1.28	42.91 18.80 23.84	26.4	3.364 5.128 6.503	6.055 9.230 11.813	381	408
Colorado Springs, 31 miles northeast of; sec. 4, T. 14 S., R. 66 W., Keystone mine, A bed, 34-foot cut, 50 feet south of entry, 800 feet from foot of shaft.	6546	B	1 2 3	25.64 40.40 43.89	38.00 46.91 56.11	5.57 7.49	.42 .56 .61	6.32 4.67 3.05	51.69 60.91 73.14	.71 1.03 1.03	33.99 16.82 18.17	16.9	6.303 6.320 7.048	8.726 10.736 12.686	381	408
4 miles north of; sec. 13, T. 13 S., R. 67 W., Neer mine, main entry, 130 feet south of shaft, A bed, 55-inch cut.	6438	B	1 2 3	22.19 34.58 44.44	37.40 47.89 52.82	5.83 7.49	.47 .60	7.24 6.07 4.46	37.40 64.00 80.80	.....	.....	17.4	4.724 6.071 6.503	8.503 10.928 11.813	381	409
4 miles north of; SE. $\frac{1}{4}$ NE. $\frac{1}{4}$ sec. 24, T. 13 S., R. 67 W., prospect opening, C bed, 24-foot cut.	7129	B	1 2 3	23.07 31.20 46.71	33.60 46.27 53.29	10.13 13.17	.27 .37	5.77 4.17 3.80	61.99 71.39	.83 1.09 1.30	35.56 22.54	14.5	5.461 5.799 6.679	8.030 10.438 12.022	381	409
4 miles northeast of; sec. 33, T. 13 S., R. 66 W., Rapson mine, A bed, 8-foot cut (5 feet 9 inches sampled), room 3, south entry 4	6441	B	1 2 3	19.90 34.26 42.77	34.26 47.89 52.82	7.48 9.34	.46 .46	.....	.....	.....	.....	14.6	4.802 5.995 6.613	8.643 10.791 11.903	381	409
Curtis, sec. 29, T. 13 S., R. 66 W., Curtis mine, A bed, 124-foot bend (only 6 feet 10 inches sampled), iron ore at entry 7.	6440	B	1 2 3	20.92 33.68 45.79	38.87 50.42 59.67	5.53 6.99	.39 .40	6.05 4.72 3.07	52.25 60.07 71.04	.69 1.07 1.16	35.09 20.86 22.42	15.6	6.931 8.261 9.732	8.912 11.270 12.118	381	410
Sec. 29, T. 13 S., R. 66 W., Danville mine, A bed, 6-foot 5-inch cut, from main slope beyond entry 9.	6442	B	1 2 3	21.80 42.99 47.00	37.91 48.48 53.00	6.67 8.53	.51 .51	5.07	94	.94	22.42	15.4	4.735 6.035 6.620	8.523 10.899 11.916	381	410
Franceville, 2 miles south of; sec. 30, T. 14 S., R. 64 W., Call or New Franceville mine, A bed, 34-foot cut, 1,050 feet northeast of mouth of slope.	6438	B	1 2 3	19.23 32.34 40.04	41.41 51.27	7.02 8.69	.45 .56	5.79 4.52 4.95	53.63 66.40 72.72	.86 1.06 1.16	32.25 18.77 20.56	14.5	5.170 6.401 7.010	9.306 11.522 12.628	381	410
24 miles southeast of; sec. 29, T. 14 S., R. 64 W., Davies mine, 425 feet northeast of mouth, A bed, 41-inch cut.	6437	B	1 2 3	22.12 41.68 45.50	38.88 49.92 54.70	6.54 8.40	.48 .62	.....	.....	.....	.....	18.0	5.631 7.280 7.893	10.136 13.014 14.207	381	411
Pikeview sec. 18, T. 13 S., R. 66 W., Carlton mine, entry 13.	6443	B	1 2 3	25.52 42.37 45.32	38.08 53.13 57.68	4.84 6.50	.24 .36	.....	.....	.....	.....	15.3	6.194 6.626 7.195	8.305 11.151 13.305	381	411
3 miles northwest of; SW. $\frac{1}{4}$ sec. 11, T. 13 S., R. 67 W., Monument Valley mine (south wall of slope 20 feet from mouth), B 3-foot bed 31- inch cut, weathered.	6545	B	1 2 3	20.14 43.99 48.28	37.64 47.13 51.72	7.09 8.88	1.03 1.42	5.74 4.38 4.81	51.64 64.06 70.96	.58 .73 .80	33.92 20.06 22.01	11.4	6.827 6.082 6.675	8.743 10.948 12.015	381	412

Table of chemical analyses—Continued.

Sample.		Proximate.				Sulphur.	Ultimate.			Air-drying loss.	Calorific value.		Reference.				
		Moisture.	Volatile matter.	Fixed carbon.	Ash.		Hydrogen.	Carbon.	Nitrogen.		Oxygen.	Calories.		British thermal units.			
Lab-ora-tory No.	Kind.	Con-dition.															
COLORADO—Continued.																	
FREMONT COUNTY.																	
Canon City, Royal Gorge No. 2 mine, level 6 (south side of main entry, Lower, 3½-foot, bed, 4½-inch cut).	6253	B	1	11.19	36.77	45.75	6.29	0.92	5.14	62.50	0.96	23.89	4.5	6,270	11,286	412	
			2	.....	41.40	51.52	7.08	1.04	4.73	70.38	1.08	15.69	.....	7,060	12,708	.....
			3	.....	44.55	55.45	.....	1.12	5.09	75.16	1.16	16.89	.....	7,598	13,676	.....
Same (Middle, 4-foot bed)	6252	B	1	12.33	36.73	44.53	6.41	3.03	5.38	69.71	1.03	13.92	6.1	6,160	11,088	412	
			2	.....	41.90	50.79	7.31	3.40	4.57	63.21	1.11	13.02	.....	7,026	12,647	.....
			3	.....	45.21	54.79	.....	3.73	5.23	60.70	1.03	17.02	.....	7,580	13,644	.....
Same, crosscut from level 5, Upper bed, 4½-foot.	6249	B	1	14.99	34.22	45.71	5.08	.54	4.53	60.70	.91	17.02	8.1	6,024	10,843	412	
			2	.....	40.25	53.77	5.98	.64	4.53	71.47	1.07	16.31	.....	7,086	12,755	.....
			3	.....	42.81	57.19	.....	.68	4.82	70.61	1.14	17.35	.....	7,537	13,567	.....
Same (ear sample)	6248	C	1	11.64	35.10	44.02	9.24	1.14	.....	.....	.....	.....	4.8	.....	.....	.....
			2	39.72	49.82	10.46	1.20
			3	44.36	55.64	1.44
2 miles south of; sec. 5, T. 19 S., R. 70 W., Nonac (No. 5) mine, 2,600 feet east of entrance, working face, 6-foot cut.	6251	B	1	11.08	33.62	49.91	5.39	.93	5.18	63.67	1.04	23.79	4.8	6,347	11,425	412	
			2	.....	37.81	56.13	6.06	1.02	4.44	71.60	1.17	15.68	.....	7,138	12,848	.....
			3	.....	40.25	59.75	.....	1.15	4.73	76.22	1.25	16.68	.....	7,598	13,676	.....
4 miles south of; sec. 17, T. 19 S., R. 70 W., Diamond mine, level 2, 40½-inch cut.	6250	B	1	23.18	30.34	40.20	6.28	.95	6.15	54.62	1.79	31.21	17.2	5,348	9,626	413	
			2	.....	36.34	52.34	8.17	1.24	4.65	71.01	1.03	13.81	.....	6,961	12,530	.....
			3	.....	39.49	52.34	.....	1.35	5.06	77.43	1.12	15.04	.....	7,580	13,646	.....
3 miles southeast of; sec. 16, T. 19 S., R. 70 W., Little mine, 100 feet south of foot of shaft, in entry 1 south, 2½-inch cut.	6257	B	1	12.98	38.13	46.46	7.38	.63	5.60	61.46	.90	24.13	6.2	6,045	10,881	413	
			2	.....	38.13	53.39	8.48	.72	4.67	70.63	1.03	14.47	.....	6,947	12,505	.....
			3	.....	41.66	58.34	.....	.79	5.10	77.18	1.13	15.80	.....	7,591	13,604	.....
Chandler, sec. 22, T. 19 S., R. 70 W., Chandler mine, Chandler bed, room 1, Cuckoo entry, 58-inch cut.	6254	B	1	9.89	35.28	48.62	6.21	.43	4.44	64.02	.91	23.33	3.3	6,357	11,443	414	
			2	.....	39.15	53.96	6.89	.48	4.77	76.30	1.08	17.33	.....	7,054	12,697	.....
			3	.....	42.05	57.95	.....	.52	5.28	75.94	1.02	23.37	.....	7,576	13,637	.....
Radiant, 3 miles south of; sec. 25, T. 20 S., R. 70 W., Brilliant mine, 70½-inch bed (200 feet south-west of foot of shaft, 5-foot cut).	6379	B	1	11.15	34.82	44.15	9.88	.51	5.28	59.46	1.02	15.15	2.9	5,961	10,730	414	
			2	.....	39.19	49.69	11.12	.57	4.55	67.46	1.15	15.15	.....	6,709	12,076	.....
			3	.....	44.09	55.91	.....	.64	5.12	75.90	1.29	17.05	.....	7,548	13,586	.....
Same (dull top coal, 6½-foot bed)	6378	B	1	9.06	31.72	36.61	22.61	.48	5.09	51.33	.93	19.56	1.9	5,163	9,293	414	
			2	.....	34.88	40.26	24.86	.53	4.49	56.44	1.02	12.66	.....	5,677	10,219	.....
			3	.....	36.43	53.58	.....	.71	5.39	65.09	1.36	16.84	.....	7,556	13,601	.....
Same (sample of bright shiny layers abundant in bony coal, 6½-foot bed).	6377	B	1	12.98	31.54	33.22	2.26	.73	5.39	65.09	.80	25.73	3.0	6,303	11,345	414	
			2	.....	36.25	61.15	2.60	.84	4.64	76.80	.92	16.30	.....	7,243	13,037	.....
			3	.....	37.22	62.78	.....	.86	4.66	76.80	.94	16.74	.....	7,436	13,385	.....

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.		Reference.			
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.	British thermal units.	Bul- letin No.	
COLORADO—Continued.																	
GARFIELD COUNTY—continued.																	
Cardiff, Black Diamond mine—Continued.	4050	B	1	14.11	32.71	43.99	9.19	0.91	5.50	57.97	1.46	24.97	7.6	5,753	10,355	316	417
			2	.....	38.05	51.22	10.70	1.06	4.58	67.49	1.70	14.47	.....	6,698	12,056	.....	.....
			3	.....	42.65	57.35	.....	1.19	5.12	75.58	1.90	16.21	.....	7,501	13,502	.....	418
			4	.....	.....	.....	.....	.....	5.19	76.49	1.93	16.39	.....	7,564	13,615	.....	.....
Marion on C. & M. coal spur, SE. $\frac{1}{4}$ sec. 10, T. 8 S., R. 89 W., Marion mine (Allen bed, about 200 feet from mouth of entry, 55-inch cut).	9195	B	1	3.81	36.30	55.29	4.60	.40	5.50	76.49	1.64	14.08	1.6	7,450	13,410	.....	.....
			2	.....	37.74	57.48	4.78	.42	5.28	76.70	1.71	11.11	.....	7,745	13,941	.....	.....
			3	.....	39.64	60.36	.....	.44	5.54	80.55	1.80	11.67	.....	8,134	14,641	.....	418
Same, Allen bed (900 feet in mine, entry 1, 60-inch cut).	9196	B	1	4.44	36.65	54.61	4.30	.46	5.58	73.85	1.64	14.17	2.6	7,505	13,509	.....	.....
			2	.....	38.35	57.15	4.50	.48	5.33	77.28	1.72	10.69	.....	7,854	14,137	.....	.....
			3	.....	40.16	59.84	.....	.50	5.58	80.92	1.80	11.20	.....	8,224	14,803	.....	.....
Same, Anderson 4-foot bed, 1,200 feet in mine, north entry, 25 feet from fault, 4-foot cut.	9197	B	1	6.34	34.78	55.96	2.92	.42	5.56	74.31	1.55	15.24	4.3	7,440	13,392	.....	418
			2	.....	37.13	59.75	3.12	.45	5.19	79.34	1.65	10.25	.....	7,944	14,299	.....	.....
			3	.....	38.33	61.67	.....	.46	5.36	81.89	1.70	10.59	.....	8,200	14,760	.....	419
1 mile west of; SW. $\frac{1}{4}$ SE. $\frac{1}{4}$ sec. 9, T. 8 S., R. 89 W., Keystone mine, Keystone bed (prospect hole), 34-foot cut.	*9202	B	1	24.10	28.36	36.23	11.31	.29	.....	.....	.....	.....	13.4	4,188	7,538	.....	.....
			2	.....	37.37	47.73	14.90	.38	.....	.....	.....	.....	.....	5,518	9,932	.....	.....
			3	.....	37.37	47.73	14.90	.45	.....	.....	.....	.....	.....	6,484	11,671	.....	420
Newcastle, $\frac{1}{4}$ mile southwest of; NE. $\frac{1}{4}$ sec. 4, T. 6 S., R. 91 W., Keystone mine, Keystone No. 1 bed (600 feet down slope, lowest level, 2-foot bed, 20-inch cut).	3932	B	1	4.16	35.55	54.94	5.35	.42	5.27	73.24	1.44	14.28	1.0	7,290	13,122	316	.....
			2	.....	37.09	57.33	5.58	.44	5.02	76.42	1.50	11.04	.....	7,606	13,601	415	.....
			3	.....	39.29	60.71	.....	.46	5.32	80.94	1.59	11.69	.....	8,050	14,501	.....	.....
			4	.....	39.29	60.71	.....	.....	5.34	81.31	1.60	11.75	.....	8,083	14,549	.....	.....
Same (600 feet down slope, lowest level, 2-foot bed, 20-inch cut).	3935	B	1	3.68	36.66	52.77	6.89	.44	5.12	71.99	1.39	14.17	.9	7,178	12,920	316	420
			2	.....	38.06	54.79	7.15	.46	4.89	74.74	1.44	11.32	.....	7,452	13,414	415	.....
			3	.....	40.99	59.01	.....	.49	5.27	80.50	1.55	12.19	.....	8,025	14,347	.....	.....
			4	.....	40.99	59.01	.....	.....	5.29	80.90	1.56	12.25	.....	8,054	14,497	.....	.....
Same (1,200 feet from opening, Keystone No. 2 bed, 26-inch cut).	8807	B	1	5.3	33.5	52.0	9.22	.42	5.14	68.28	1.25	15.69	2.8	6,806	12,350	.....	420
			2	.....	35.0	55.3	9.74	.44	4.80	72.10	1.32	11.60	.....	7,245	13,040	.....	.....
			3	.....	39.0	61.0	.....	.49	5.32	79.88	1.46	12.85	.....	8,030	13,450	.....	.....
$\frac{1}{4}$ mile southeast of; NW. $\frac{1}{4}$ sec. 2, T. 6 S., R. 91 W., Corvett mine, 1,200 feet from shaft, Allen 14-foot bed.	3938	B	1	3.51	38.38	53.17	4.94	.54	5.10	72.86	1.74	14.82	.8	7,370	13,266	316	420
			2	.....	39.78	55.10	5.12	.56	4.88	75.51	1.80	12.13	.....	7,638	13,738	415	.....
			3	.....	41.92	58.08	.....	.59	5.14	79.53	1.90	12.79	.....	8,060	14,490	.....	.....
			4	.....	41.92	58.08	.....	.....	5.18	80.06	1.91	12.85	.....	8,085	14,553	.....	.....
Same (lower 54-inch bench).....	3933	B	1	3.51	38.5	53.34	4.65	.52	.....	.....	.....	.....	.7	.....	.....	316	420
			2	.....	39.9	55.28	4.82	.54	.....	.....	.....	.....	.....	.....	.....	415	.....
			3	.....	41.92	58.08	.....	.57	.....	.....	.....	.....	.....	.....	.....	.....	.....

Locality, bed, etc.

COLORADO—Continued.

GARFIELD COUNTY—continued.

Cardiff, Black Diamond mine—Continued.

Same (61-inch cut).

Marion on C. & M. coal spur, SE. $\frac{1}{4}$ SW. $\frac{1}{4}$ sec. 10, T. 8 S., R. 89 W., Marion mine (Allen bed, about 200 feet from mouth of entry, 55-inch cut).

Same, Allen bed (900 feet in mine, entry 1, 60-inch cut).

Same, Anderson 4-foot bed, 1,200 feet in mine, north entry, 25 feet from fault, 4-foot cut.

1 mile west of SW. $\frac{1}{4}$ SE. $\frac{1}{4}$ sec. 9, T. 8 S., R. 89 W., Keystone mine, Keystone bed (prospect hole), 34-foot cut.Newcastle, 1 mile southwest of NE. $\frac{1}{4}$ sec. 4, T. 6 S., R. 91 W., Keystone mine, Keystone No. 1 bed (20-inch cut).

Same (600 feet down slope, lowest level, 2-foot bed, 20-inch cut).

Same (1,200 feet from opening, Keystone No. 2 bed, 26-inch cut).

 $\frac{1}{2}$ mile southeast of NW. $\frac{1}{4}$ sec. 2, T. 6 S., R. 91 W., Cor-
yell mine, 1,200 feet from shaft, Allen 14-foot bed.

Same (lower 54-inch bench).

Same (best coal of 5-foot bench).....	B	3337	1	4.00	38.41	53.74	3.85	.51	.....	1.2	.....	316 415
			2		40.01	55.98	4.01	.53	.....	.....	.....	316 415
3335	B		3		41.63	55.32	.55	.....	.....	.....	.....	316 415
Same (upper 9 feet).....	B		1	4.04	37.66	52.56	5.74	.53	.....	1.1	.....	316 415
	B		2		39.25	54.77	5.98	.55	.....	.....	.....	316 415
3339	B		1		41.75	58.25	.58	.....	.....	.....	.....	316 415
Same (entire bed).....	B		3	4.06	38.20	52.71	5.03	.51	.....	.....	.....	316 415
	B		2		39.82	54.94	5.24	.56	.....	.....	.....	316 415
8806	B		4		42.02	57.98	.....	.....	.....	.....	.....	316 415
Same (10-foot cut from face).....	B		1	4.4	35.0	52.7	7.89	.41	.....	.....	.....	316 415
	B		2		36.5	55.2	8.25	.43	.....	.....	.....	316 415
8810	C		1		40.0	60.0	.....	.....	.....	.....	.....	316 415
Same (collected from mine cars).....	C		3	4.8	33.0	54.1	8.1	.45	.....	.....	.....	316 415
	C		2		35.0	56.5	8.5	.47	.....	.....	.....	316 415
8804	B		1		38.0	62.0	.....	.....	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		2	25.1	30.5	40.2	4.2	.30	.....	17.4	.....	316 415
	B		3		41.0	53.3	5.7	.40	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		1		43.5	56.5	.45	.....	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		2	6.32	36.9	50.84	5.94	1.12	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		1		39.39	54.27	6.34	1.20	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		3		42.06	57.94	.....	.....	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		4		42.06	57.94	.....	.....	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		1	7.21	36.09	51.39	5.31	.69	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		2		38.89	55.39	5.72	.74	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		3		41.25	58.75	.....	.....	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		4		41.25	58.75	.....	.....	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		1	7.44	36.18	53.90	2.48	.47	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		2		39.09	58.23	2.68	.51	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		3		40.16	59.84	.....	.....	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		4		40.16	59.84	.....	.....	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		1	6.8	32.5	51.2	9.5	.35	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		2		35.0	54.9	10.1	.35	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		3		39.0	61.0	.....	.....	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		1	6.55	36.63	47.89	8.93	.48	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		2		39.20	51.24	9.56	.51	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		3		43.34	56.66	.56	.....	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		1	5.51	35.89	48.76	9.84	.29	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		2		37.98	51.61	10.41	.31	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		3		42.40	57.60	.....	.34	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		4		42.40	57.60	.....	.....	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		1	10.7	31.5	52.0	5.8	.40	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		2		35.5	58.1	6.4	.45	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		3		38.0	62.0	.....	.50	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		1	8.6	32.5	51.0	7.9	.60	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		2		35.5	55.9	8.6	.65	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		3		38.5	61.5	.....	.70	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		1	6.5	34.5	54.3	4.7	.50	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		2		37.0	58.0	5.0	.55	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		3		39.0	61.0	.....	.55	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		1	10.3	29.0	52.6	8.1	.25	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		2		32.0	58.9	9.1	.30	.....	.....	.....	316 415
33 miles southeast of; NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 90 W.; Coal ridge mine (not working) 50 feet in, C	B		3		35.5	64.5	.35	.35	.....	.....	.....	316 415

Table of chemical analyses—Continued.

Sample.		Proximate.					Ultimate.				Caloric value.		Reference.				
Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.	British thermal units.	Bul- letin No.	Page of this bulle- tin.	
COLORADO—Continued.																	
GUNNISON COUNTY—continued.																	
Floresta, sec. 16, T. 14 S., R. 87 W., Ruby anthracite mine, entry 3, 33-inch cut.	8120	B	1	3.0	86.5	7.5	0.69	2.67	83.20	1.48	4.48	1.1	7,498	13,500	.....	428	
			2	.....	89.5	7.7	71	2.40	83.79	1.53	1.86	.....	7,730	13,920	.....	.....
			3	.....	96.77	4.06	.....	.87	2.60	92.95	1.66	20.04	4.4	8,375	15,080	341	420
Mount Carbon, sec. 7, T. 15 S., R. 86 W., Alpine mine, room 20, seventh main entry, No. 2 bed, 6 feet 10½ inches.	8618	B	2	10.03	33.17	4.06	.87	3.39	79.62	1.22	20.04	.....	6,636	11,981	.....	.....
			3	.....	35.72	59.10	5.18	4.98	73.16	1.36	12.35	.....	7,388	13,316	.....	.....
			3	37.67	62.33	1.02	3.25	79.26	1.43	13.04	7,802	14,044
½ mile southwest of; sec. 18, T. 15 S., R. 86 W., La Plant mine, 400 feet west of bottom of shaft, 61-inch bed, 49-inch cut.	8619	B	1	12.8	34.0	6.66	1.02	3.86	62.21	1.46	22.66	6.5	6,260	11,270	341	429	
			2	.....	38.5	58.0	1.15	3.09	71.32	1.07	12.96	.....	7,180	12,920	.....	.....
			3	42.0	53.9	1.32	1.43	3.31	77.21	1.81	14.04	7,770	13,960
2 miles east of; sec. 31, T. 15 S., R. 86 W., 50 feet from mouth of opening, 8-foot bed.	8620	B	1	18.71	26.9	5.74	1.43	3.31	77.21	1.81	14.04	.....	5,478	9,860	341	429	
			2	.....	36.78	7.06	.47	.....	.....	.....	.....	9.6	6,739	12,130	.....	.....
			3	.....	39.58	60.42	.51	.....	.....	.....	.....	.....	7,251	13,052	341	430	
About 3 miles east of; sec. 15, T. 15 S., R. 86 W., deserted mine, 275 feet N. 50° W. of mouth, 5½-foot cut.	8616	B	1	10.1	33.5	5.1	.50	.....	.....	.....	.....	4.3	6,615	11,910	.....	.....
			2	.....	37.5	56.6	.55	.....	.....	.....	.....	.....	7,355	13,230	.....	.....
			3	39.5	60.5	7,815	14,070	341	430
3 miles northeast of; sec. 4, T. 15 S., R. 86 W., Rubler mine (end of main entry, No. 2 bed, 6 feet 11½ inches, 5½-foot cut.	8617	B	1	10.4	32.5	4.02	.46	5.08	76.23	1.47	12.77	5.3	6,775	12,200	341	430	
			2	.....	36.0	60.0	.44	5.27	79.43	1.53	13.31	.....	7,565	13,620	.....	.....
			3	37.5	62.5	.46	4.6	5.67	74.43	1.27	19.50	5.9	6,332	11,398
Same (north entry 2, 950 feet from opening) .	10091	B	1	10.65	34.94	45.91	.49	4.91	72.43	1.42	12.24	.....	7,087	12,757	.....	.....
			2	.....	39.10	51.39	.54	4.43	80.04	1.57	12.42	.....	7,832	14,098	.....	.....
			3	.....	43.21	56.79	.60	5.76	73.22	1.22	16.13	2.0	7,770	13,217	341	431	
Somerset, 1 mile east of; sec. 11, T. 13 S., R. 90 W., Sylvester prospect in north bank of Gunnison River, 70 feet in, 70-inch cut.	5406	B	1	5.49	35.65	3.07	.63	5.46	73.22	1.22	11.91	.....	8,031	14,456	.....	.....
			2	.....	37.72	59.03	.65	5.76	77.47	1.29	11.91	.....	7,770	13,217	.....	.....
			3	.....	38.98	61.01	.65	6.03	74.08	1.33	12.32	.....	8,031	14,456	.....	.....
2 miles east of; sec. 11, T. 13 S., R. 90 W., Hawks Nest prospect, 100 feet in, upper 5 feet of 74-foot bed.	5405	B	1	5.96	33.92	3.17	.47	5.68	74.08	1.36	15.24	2.7	7,358	13,244	341	431	
			2	.....	36.44	71.19	.50	5.34	78.77	1.45	10.57	.....	7,824	14,083	.....	.....
			3	.....	37.08	73.08	.52	5.33	81.52	1.50	10.93	.....	8,097	14,575	.....	.....
4 miles south of; 9 miles east of Paonia, sec. 32, T. 13 S., R. 90 W., Shoecraft (Porter claims) prospect, 25 feet in, 7-foot cut.	5807	B	1	21.44	29.13	4.08	.33	.....	.....	.....	.....	9.8	4,372	7,870	341	431	
			2	.....	37.08	56.97	.45	.....	.....	.....	.....	.....	5,565	10,017	.....	.....
			3	.....	39.43	60.57	.45	.....	.....	.....	.....	.....	5,918	10,652	.....	.....
7 miles south of; 12 miles east of Paonia, sec. 22, T. 14 S., R. 90 W., Simonton (Porter claims) prospect, 25 feet in, 7 feet of 64½-foot bed.	5529	B	1	19.23	31.04	5.38	.31	.....	.....	.....	.....	10.1	4,871	8,768	341	432	
			2	.....	38.43	54.91	.41	.....	.....	.....	.....	.....	6,031	10,886	.....	.....
			3	.....	41.17	58.83	.41	.....	.....	.....	.....	.....	6,462	11,432	.....	.....

Table of chemical analyses—Continued.

Sample.		Proximate.			Ultimate.				Calorific value.		Reference.							
		Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.		Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.	British thermal units.	Page of this bulle- tin.
COLORADO—Continued.																		
LA PLATA COUNTY—continued.																		
Porter—Continued.																		
Porter No. 2 mine, No. 2 bed (43½-inch cut)																		
	3996	B		1	2.57	32.92	55.27	9.24	0.72					1.1			316	444
				2		35.79	56.73	9.48	.74									
				3		37.33	62.67		.82									
15 miles southwest of; 5 miles northeast of Pendle- ton, N. Mex., NW. ¼ SW. ¼ sec. 23, T. 32 N., R. 12 W., 25 feet north of State line, Pruitt mine, Carbonero bed (58-inch cut).																		
	3639	B		1	7.14	33.54	46.73	12.59	.56					3.0			316	444
				2		36.12	50.32	13.56	.60									
				3		41.79	58.21		.69									
LARIMER COUNTY.																		
Dixon, 6 miles northeast of; sec. 24, T. 10 N., R. 68 W., Indian Springs mine, 700 feet north and 70 feet east on main entry, 74-inch bed (61-inch cut).																		
	6433	B		1	29.33	28.95	32.72	9.00	3.43	6.28	42.88	0.75	37.66	24.9	4,149	7,468	381	445
				2		40.96	46.30	12.74	4.85	4.27	60.68	1.06	16.40		5,871	10,568		
				3		46.94	53.06		5.56	4.89	69.54	1.21	18.80		6,728	12,110		
LAS ANIMAS COUNTY.																		
Agallar, 2 miles northwest of: NW. ¼ sec. 20, T. 30 S., R. 65 W., Las Animas No. 4 mine, Broad- head No. 4 bed, 4-foot cut.																		
	6536	B		1	2.42	35.14	56.38	6.06	.42	5.30	76.93	1.19	10.10	1.1	7,530	13,554	381	446
				2		36.01	57.78	6.21	.43	5.15	78.84	1.22	8.15		7,717	13,891		
				3		38.39	61.61		.46	5.49	84.06	1.30	8.69		8,228	14,810		
1 mile southwest of: NW. ¼ sec. 34, T. 30 S., R. 65 W., Peerless-Annex mine, room 1 north en- try, Peerless bed, 4-foot cut.																		
	6528	B		1	2.15	34.82	54.79	8.24	.72	4.97	75.11	1.21	9.75	.7	7,463	13,415	381	446
				2		35.59	55.99	8.42	.74	4.83	76.76	1.24	8.01		7,617	13,711		
				3		38.86	61.14		.81	5.27	83.81	1.35	8.76		8,317	14,971		
Berwind, NE. ¼ NE. ¼ sec. 36, T. 31 S., R. 65 W., Ber- wind No. 3 mine, south entry 2, off east entry 14, Berwind bed, 54-inch cut.																		
	6456	B		1	3.31	32.55	53.75	10.39	.74	5.30	72.61	1.24	9.72	2.3	7,329	13,192	381	446
				2		33.66	55.59	10.75	.76	5.10	75.09	1.28	7.02		7,580	13,644		
				3		37.71	62.29		.85	5.71	84.13	1.43	7.88		8,493	15,287		
1 mile west of: Toller mine, 180 feet southwest of shaft, 7½-inch cut.																		
	796b	B		1	6.43	31.82	47.97	13.78	.56					5.8	6,789	12,220	5	447
				2		34.00	51.27	14.73	.60						7,256	13,061		
				3		39.87	60.13		.70						8,509	15,317		
Same.																		
	880b	C		1	4.22	32.38	50.22	13.18	.64	5.14	70.69	1.20	9.15	2.6	7,045	12,681		
				2		33.80	52.44	13.76	.67	4.88	73.80	1.25	5.64		7,355	13,239		
				3		39.19	60.81		.78	5.66	85.58	1.44	6.54		8,529	15,351		

480D	A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000
Bowen, 1 mile north of Sunfield mine, Walsen bed (2,000 feet north of opening, 61-inch bed).																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.				Ultimate.				Calorific value.		Reference.					
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.		Air- dry- loss.	Calo- ries.	British thermal units.	Page of this bul- letin.	
COLORADO—Continued.																		
LAS ANIMAS COUNTY—Continued.																		
Primero, Primero mine—Continued.	537D	C	1	1.24	31.65	50.99	16.12	0.54	4.73	69.96	1.36	7.29	0.8	7,001	12,602	5	.....
Same (run of mine)			2		32.05	51.63	16.32	.55	4.65	70.83	1.38	6.27	.....	.....	7,089	12,760	.....
			3		35.30	61.70		.63	5.56	84.04	1.65	7.49	.....	.....	8,471	15,248	.....
Same (room 1, third butt entry A, off entry 9, 7-foot 7½-inch cut).	637D	B	1	2.28	29.81	58.75	9.16	.51	5.22	74.24	1.08	9.80	1.5	7,635	13,781	381	450	
			2		30.50	60.13	9.37	.51	5.09	75.97	1.11	7.95	.....	.....	7,834	14,101	.....
			3		33.65	66.35		.56	5.62	83.83	1.22	8.77	.....	.....	8,644	15,559	.....
Same (west entry 200 feet in, natural coke)	6368	B	1	4.07	7.97	77.63	10.33	.60	.....	.....	.....	.....	2.4	.....	.....	381	450
			2		8.31	80.92	10.77	.71
			3		9.31	90.69		.35	5.08	71.98	1.31	12.30	1.4	7,185	12,933	381	451
Primrose (near Kipner), SE. ¼ NW. ¼, sec. 5, T. 30 S., R. 65 W., Primrose mine, room 3 off entry 7½ north, 44-foot cut.	6530	B	1	3.04	34.44	53.52	8.98	.36	4.89	74.24	1.35	9.90	.....	7,411	13,340	.....	.....
			2		33.52	55.22	9.26	.36	4.89	74.24	1.35	9.90	8,167	14,701
			3		39.14	60.86		.40	5.39	81.81	1.49	10.91	1.6	5	452
Rugby, 1½ miles southwest of; sec. 9, T. 30 S., R. 65 W., Rapson mine, Cameron bed (250 feet south of drift mouth, south entry 3, 40½-inch cut).	735D	A	1	3.77	36.55	51.26	8.42	.70	.....	.....	.....	.....	.....	.....	.....	.....	.....
			2		37.98	53.27	8.75	.73
			3		41.62	53.88		.80
Same (north entry 3, 250 feet north of drift mouth, 33-foot bed).	734D	A	1	3.28	36.08	51.44	9.20	.72	.....	.....	.....	.....	.....	.....	.....	.....	.....
			2		37.91	53.18	9.51	.74
			3		41.23	58.77		.82
Same (1-inch screenings)	805D	C	1	3.11	35.22	47.68	13.99	.81	4.86	67.60	1.36	11.33	1.1	7,178	12,920	5	452	
			2		36.35	49.21	14.44	.84	4.65	69.77	1.40	8.90	7,421	13,358
			3		37.91	53.73		.81	5.43	81.55	1.64	10.40	8,201	14,762	5
Same (picked from car), "Niggerhead," 46½- inch bed).	6534	C	1	1.98	36.72	49.45	18.85	.53	.....	.....	.....	.....	.7	6,992	12,586	.....	.....
			2		39.32	50.45	19.23	.54	8,172	14,710
			3		37.54	62.46		.67
Same (entry 3 south, 46½-inch bed)	6533	B	1	3.67	33.69	52.16	10.48	.64	5.30	70.63	1.19	11.46	2.3	7,025	12,645	381	452	
			2		34.97	54.15	10.88	.66	5.08	73.63	1.24	8.51	7,293	13,127
			3		39.24	60.76		.74	5.70	82.62	1.39	9.55	8,183	14,729	368	452
Same (entry 3 south, 46½-inch bed)	230D	A	1	3.52	29.09	54.63	12.76	.70	.....	.....	.....	.....	.....	.....	.....	.....	.....
			2		34.75	65.25		.84
			3		34.75	65.25		.84
Sopris, Francisco mine, Lower bed (1,200 feet southwest of slope, 45½-inch bed).	231D	A	1	1.62	29.16	59.56	9.66	.72	.....	.....	.....	.....	.7	7,715	13,887	368	452
			2		29.66	60.54	9.80	.73	7,842	14,116
			3		32.88	67.12		.81	8,696	15,653

[illegible]

Table of chemical analyses—Continued.

Sample.		Proximate.				Ultimate.				Calorific value.		Reference.							
		Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile car- mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.		Nitro- gen.	Oxy- gen.	Alr- dry- ing loss.	Calo- ries.	British thermal units.	Bul- letin No.	Page of this bulle- tin.
COLORADO—Continued.																			
MESA COUNTY—continued.																			
Grand Junction, Book Cliff mine—Continued.																			
Same (first coal below upper bed, reported 2½ feet, collected by mine superintendent).																			
	3581	B	1	1	11.03	35.90	46.35	6.72	0.68					5.8				371	461
			2	2		40.36	52.09	7.55	.76										
			3	3		43.66	56.34		.82										
About 11 miles northeast of; NW, ¼ sec. 7, T. 10 S., R. 99 W., Steel mine, Palsades bed (4-foot 11-inch cut).																			
	3495	B	1	1	9.54	34.49	46.33	9.64	.78					3.1				316	462
			2	2		38.13	51.21	10.66	.86									371	
About 12 miles northeast of; sec. 1, T. 10 S., R. 100 W., Black Diamond mine, Palsades bed (54-foot cut, weathered).																			
	3493	B	1	1	15.39	32.57	45.69	6.35	.62					7.2				316	462
			2	2		38.49	54.00	7.51	.73									371	
About 12 miles northeast of; sec. 36, T. 9 S., R. 100 W., Bob Cat mine, Cameo bed (44 to 55 inch cut).																			
	3489	B	1	1	6.86	34.20	43.90	15.04	.62					1.8				316	463
			2	2		36.72	47.13	16.15	.67									371	
About 12 miles nearly north of; sec. 35, T. 9 S., R. 100 W., Excelsior mine, Palsades bed (55-inch cut, weathered).																			
	3488	B	1	1	6.52	32.75	48.37	9.36	.67					.6				316	463
			2	2		38.24	51.75	10.01	.72									371	
Palsades, SW, ¼ SW, ¼ sec. 3, T. 11 S., R. 98 W., Palsades mine, Palsades bed, room 1, south entry.																			
	3539	B	1	1	9.02	34.51	50.89	5.58	.80					3.1				316	463
			2	2		42.49	57.51		.74									371	
Same (room 1, west entry).																			
	3541	B	1	1	7.52	36.03	50.46	5.99	.85	5.26	68.43	1.55	17.92	2.0	6,838	12,308		316	463
			2	2		38.96	54.56	6.48	.82	4.78	73.99	1.88	12.15		7,394	13,309		371	
			3	3		41.06	58.34		.98	5.11	79.12	1.79	13.00		7,906	14,231			
			4	4						5.16	79.90	1.81	13.13	2.5	7,962	14,332			
Same (room 5, west entry).																			
	3549	B	1	1	8.77	36.55	48.72	5.96	.83									316	463
			2	2		40.06	53.41	6.53	.91									371	
1½ miles northeast of; Norwood prospect (Cameo, 95½-inch, bed).																			
	3543	B	1	1	26.85	30.07	36.16	6.92	.97					7.8				371	463
1½ miles northeast of; NW, ¼ SE, ¼ sec. 3, T. 11 S., R. 98 W., Riverside mine, Palsades bed (from working face, 36-inch cut).																			
	3546	B	1	1	7.57	33.56	52.91	5.96	.72	5.50	69.47	1.56	16.79	2.2	6,913	12,443		316	464
			2	2		36.31	57.24	6.45	.78	5.04	75.16	1.69	10.88		7,479	13,462		371	
			3	3		38.81	61.19		.83	5.39	80.34	1.80	11.64		7,995	14,391			
			4	4						5.43	81.01	1.82	11.74		8,043	14,477			

2 miles northwest of; SE, $\frac{1}{2}$ NE, $\frac{1}{2}$ sec. 6, T. 11 S., R. 98 W., Garfield mine (Palsades bed, 84 $\frac{1}{2}$ -inch cut).	B	1	13.96	31.30	48.73	6.01	.63	5.82	62.19	1.40	23.95	4.4	6.034	10.841	316	464
		2	36.38	56.63	6.99	.73	4.96	72.28	1.63	13.41	.....	.....	7.013	12.623	371	
		3	39.11	60.89	.....	.79	5.34	77.71	1.75	14.41	.....	.....	7.539	13.570		
		4	.....	.....	.....	.....	5.38	78.32	1.76	14.54	.....	.....	7.582	13.648		
2 miles northeast of; NE, $\frac{1}{2}$ sec. 3, T. 11 S., R. 98 W. (prospect pit, Cameo bed, 61-inch cut).	B	1	4.71	34.68	52.67	7.95	.56	.....	.....	.....	.....	.....	.1	.....	316	465
		2	36.39	56.27	8.34	.59	.....	.....	.....	.....	.....	.....	.....	.....	371	
		3	39.70	60.30	.....	.74	.....	.....	.....	.....	.....	.....	.....	.....
9 miles southeast of; SW, $\frac{1}{2}$ SE, $\frac{1}{2}$ sec. 17, T. 12 S., R. 97 W., Patterson mine (125 feet from mouth of opening, main entry, 4-foot cut), Cameo bed	B	1	11.51	32.60	46.53	10.36	.93	.....	.....	.....	.....	.....	.....	.....	341	465
		2	36.84	51.45	11.71	1.05	.....	.....	.....	.....	.....	.....	.....	.....	341	
		3	41.73	58.27	.....	1.19	.....	.....	.....	.....	.....	.....	.....	.....	341	
MOFFAT COUNTY. ^a																
MONTEZUMA COUNTY.																
Mancos, 2 $\frac{1}{2}$ miles southeast of; Spencer mine, Spencer bed (3-foot cut).	B	1	5.44	38.71	50.10	5.75	1.01	5.80	72.26	1.47	13.71	2.0	7.170	12.906	316	466
		2	40.94	52.98	6.08	1.07	5.50	76.41	1.55	9.39	.....	.....	7.582	13.648		
		3	43.59	56.41	.....	1.14	5.80	81.36	1.66	9.98	.....	.....	8.073	14.531		
		4	.....	.....	.....	.....	5.92	82.30	1.67	10.11	.....	.....	8.140	14.652		
Same (38-inch cut)	B	1	5.42	38.14	51.29	5.15	.78	.....	.....	.....	.....	.....	.....	.....	316	466
		2	40.33	54.22	5.45	.82	.....	.....	.....	.....	.....	.....	.....	.....
		3	42.05	57.35	.....	.87	.....	.....	.....	.....	.....	.....	.....	.....
3 miles southwest of; Wood mine (100 feet in, 47 $\frac{1}{2}$ -inch cut), Spencer bed.	B	1	6.12	35.86	49.44	8.58	.93	.....	.....	.....	.....	.....	.....	.....	316	466
		2	38.20	52.66	9.14	.67	.....	.....	.....	.....	.....	.....	.....	.....
		3	42.05	57.95	.....	.74	.....	.....	.....	.....	.....	.....	.....	.....
7 miles north of; Dakota formation	B	1	7.71	27.84	48.11	16.34	1.02	4.87	64.24	.89	12.64	6.8	6.340	11.484	.....	467
		2	30.17	52.12	17.71	1.11	1.02	4.34	69.61	.96	6.27	.....	6.913	12.443		
		3	36.65	63.35	.....	1.34	5.28	84.58	1.17	7.63	.....	.....	8.400	15.120		
		4	.....	.....	.....	.....	5.35	85.73	1.19	7.73	.....	.....	8.484	15.271	316	467
8 miles north of; Traller mine, 55 feet from mouth, Dakota formation coal (33-inch cut).	B	1	1.54	31.26	53.80	13.40	1.01	.....	.....	.....	.....	.....	.....	.....
		2	31.75	54.64	13.61	1.03	.....	.....	.....	.....	.....	.....	.....	.....
		3	36.74	63.26	.....	1.19	.....	.....	.....	.....	.....	.....	.....	.....
10 miles southwest of; Todd mine, sec. 28, T. 35 N., R. 14 W. (28-inch cut).	B	1	20.92	31.37	41.26	6.45	.43	.....	.....	.....	.....	.....	.....	.....	316	467
		2	39.67	52.17	8.16	.54	.....	.....	.....	.....	.....	.....	.....	.....
		3	43.19	56.81	.....	.59	.....	.....	.....	.....	.....	.....	.....	.....
PITKIN COUNTY.																
Coal Basin (about 30 miles south of Glenwood Springs), Coal Basin mine, "Sunshine" bed (600 feet from opening, 72 $\frac{1}{2}$ -inch cut).	B	1	1.33	21.48	70.24	6.95	.51	.....	.....	.....	.....	.....	.....	.....	316	467
		2	21.77	71.19	7.04	.52	.....	.....	.....	.....	.....	.....	.....	.....
		3	23.42	76.58	.....	.56	.....	.....	.....	.....	.....	.....	.....	.....
Same (9-foot bed, upper bench, sampled from railroad cut).	C	1	1.27	22.38	67.35	9.00	.50	.....	.....	.....	.....	.....	.....	.....	316	.....
		2	22.67	68.21	9.12	.51	.....	.....	.....	.....	.....	.....	.....	.....
		3	24.95	75.05	.....	.56	.....	.....	.....	.....	.....	.....	.....	.....
Same (1,600 feet from mouth, 9-foot cut).....	B	1	1.15	22.53	68.85	7.57	.48	.....	.....	.....	.....	.....	.....	.....	316	467
		2	22.69	69.65	7.66	.49	.....	.....	.....	.....	.....	.....	.....	.....
		3	24.57	76.43	.....	.53	.....	.....	.....	.....	.....	.....	.....	.....
Same (2,200 feet from mouth, 9-foot cut).....	B	1	.96	21.49	68.93	8.62	.52	4.66	79.61	1.83	4.76	.2	7.961	14.330	316	467
		2	21.70	69.60	8.70	.53	4.39	80.38	1.85	3.95	.....	.....	8.038	14.468		
		3	23.77	76.23	.....	.58	5.02	88.05	2.01	4.34	.....	.....	8.805	15.849		
		4	.....	.....	.....	.....	5.05	88.55	2.04	4.36	.....	.....	8.842	15.916	316	467
Same (2,500 feet from entrance, room 50, 9-foot cut).	B	1	1.22	22.02	67.84	8.92	.59	.....	.....	.....	.....	.....	.....	.....
		2	22.29	68.68	9.03	.60	.....	.....	.....	.....	.....	.....	.....	.....
		3	24.50	75.50	.....	.66	.....	.....	.....	.....	.....	.....	.....	.....

^a Certain cities and towns now included in Moffat County are here listed under Routt County.

Table of chemical analyses—Continued.

Sample.		Proximate.					Ultimate.				Calorific value.		Reference.					
		Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile car- mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.		Oxy- gen.	Air- dry- loss.	Calo- ries.	British thermal units.	
COLORADO—Continued.																		
PITKIN COUNTY—Continued.																		
Coal Basin, Coal Basin mine—Continued. Same (1,100 feet west of opening, on new slope, 78-inch cut, waste sample).	5346	A	1	2	39	19.44	70.76	7.41	0.52					1.2	7,987	14,377	5	467
			2	2		19.92	72.49	7.59	.53						8,183	14,729		
			3	2		21.56	78.44		.57						8,855	15,939		
	5255	A	1	1	20	22.39	72.90	3.51	.74					.4	8,439	15,190	5	467
			2	2		22.66	73.79	3.55	.75						8,541	15,374		
			3	2		23.49	76.51		.78						8,855	15,939		
	894D	C	3	3	07	22.67	65.10	9.16	.73	4.96	78.81	1.9	4.75	1.8	7,772	13,990	5	.....
			2	2		23.39	67.16	9.45	.65	4.77	81.31	1.74	2.08		8,018	14,432		
	5262	A	3	1	67	21.32	67.73	9.28	.72	5.27	89.80	1.92	2.29	.4	8,855	15,939	5	467
			2	2		21.38	68.88	9.44	.48						7,945	14,301		
Same, Coal Basin bed (main slope, air course, called bone coal, 46-inch cut).	5249	A	1	1	60	19.64	59.38	19.42	.45					.3	8,773	15,791	5	467
			2	2		19.92	60.34	19.74	.46						8,928	12,470		
			3	2		24.82	75.18		.57						8,773	15,791	5	.....
	888D	C	3	3	75	22.12	62.41	11.72	.40	4.79	75.80	1.45	5.84	3.1	7,416	13,349		
			2	2		22.98	64.84	12.18	.42	4.54	78.75	1.51	2.60		7,704	13,567		
	4009	B	3	2		26.17	73.83		.48	5.17	89.66	1.72	2.97	1.5	8,773	15,791	316	468
			1	2	77	35.15	58.68	3.40	.46								415	
			3	2		36.15	60.35	3.50	.47									
						37.46	62.54		.49									
	Gulch (Spring Gulch station), about 21 miles south of Glenwood Springs, Spring Gulch mine (An- derson bed, 2,070 feet from opening, 58-inch cut).	4010	B	1	2	30	34.74	56.71	6.25	.44	5.23	76.12	1.54	10.42	1.2	7,766	13,979	316	468
			2	2		35.76	58.04	6.40	.45	5.09	77.91	1.58	8.57		7,949	14,308	415	
			3	2		37.99	62.01		.48	5.43	83.24	1.68	9.17		8,492	15,286		
			4	2						5.46	83.64	1.69	9.21		8,522	15,350		
9199		B	1	3	4	34.0	55.4	7.2	.57	5.39	74.49	1.59	10.73	2.1	7,500	13,500	.....	468
			2	2		35.5	57.0	7.5	.59	5.19	77.10	1.65	7.99		7,765	13,950		
			3	2		38.0	62.0		.64	5.61	83.33	1.78	8.64		8,390	15,100		
9198		B	1	2	88	33.27	56.74	7.11	.46	5.41	75.13	1.74	10.15	1.8	7,622	13,720	.....	468
			2	2		34.26	58.42	7.32	.47	5.24	77.36	1.79	7.82		7,848	14,126		
			3	2		36.97	63.03		.51	5.65	83.47	1.93	8.44		8,408	15,242		

	3703	B	1	2	3	4	14.18	31.78	44.46	6.58	.56	5.81	60.62	1.01	25.42	6.3	5,838	10,508	316	475
1 mile south of; on Spring Creek, Smith mine, 115 feet in, 8½-foot bed, 5-foot cut.								40.53	51.80	7.67	.65	4.93	70.64	1.18	14.93		6,803	12,245	415	
								43.90	56.10		.71	5.34	76.51	1.27	16.17		7,368	13,262		
												5.38	77.05	1.28	16.29		7,403	13,325	316	476
1½ miles south of; on Spring Creek, Meeker stage road, Collium mine, 24 foot 9½-inch bed, 16½-foot cut.	3466	B	1	2	3	4	11.25	38.80	47.92	2.03	.32					3.5			316	475
								43.72	53.69	2.29	.36								415	
								44.74	55.26										316	476
4 miles south of; on Spring Creek, Meeker stage road, James mine, 100 feet in, 8-foot bed, 8-foot cut.	3704	B	1	2	3	4	12.01	35.83	47.54	4.62	.52	5.44	63.87	1.35	24.20	3.4	6,312	11,362	316	476
								40.72	54.03	5.25	.59	4.07	72.59	1.53	15.37		7,174	12,913	415	
								42.98	57.02		.63	4.93	76.61	1.62	16.22		7,571	13,628		
												4.96	77.09	1.63	16.32		7,604	13,687	316	477
7 miles west of; on Morgan Gulch, Morgan mine, 20-foot bed (50 feet in, 5½-foot cut).	3690	B	1	2	3	4	15.37	35.21	43.11	6.31	.97					6.2			316	477
								41.00	50.94	7.46	1.15								415	
Same (100 feet in, 6-foot cut)	3688	B	1	2	3	4	15.26	44.96	55.04		1.24								316	477
								30.70	50.33	3.71	.55					6.5			415	
								36.23	59.39	4.38	.65								316	477
								37.89	62.11		.68					17.6			415	
10 miles west of; on Boxelder Gulch, prospect pit, Upper 10-foot bed, wet sample, 9-foot cut.	3689	B	1	2	3	4	31.40	32.66	30.91	5.03	.38								316	477
								47.61	45.06	7.33	.48								415	
								51.38	48.62		.52									
Crab, 10 miles southeast of; sec. 16, T. 5 N., R. 90 W., Moore mine, 140 feet northwest of opening, Moore bed; 56-inch cut.	9134	B	1	2	3	4	12.43	34.09	48.01	5.47	.50	5.54	62.34	1.32	24.83	10.0	6,171	11,108		478
								38.93	54.82	6.25	.57	4.76	71.19	1.51	15.73		7,047	12,685		
								41.53	58.47		.61	5.07	75.94	1.61	16.77		7,517	13,531		478
10 miles southwest of; NW, ¼ SW, ¼ sec. 29, T. 6 N., R. 91 W., Haulbrich mine, 70 feet in, 82-inch bed, 55-inch cut.	*9137	B	1	2	3	4	17.75	30.39	48.08	3.78	.51	5.94	59.63	1.51	28.63	13.8	5,742	10,336		
								36.95	58.45	4.60	.62	4.83	72.50	1.84	15.61		6,981	12,546		
								38.73	61.27		.65	5.06	75.99	1.93	16.37		7,317	13,171		479
11 miles southwest of; SW, ¼ SE, ¼ sec. 31, T. 6 N., R. 91 W., Ratcliff mine, 60 feet in, 10-foot cut.	*9138	B	1	2	3	4	13.47	35.47	47.88	3.18	.39	5.82	62.94	1.29	26.52	10.2	6,116	11,069		
								40.99	55.33	3.68	.39	4.99	72.73	1.39	16.82		7,088	12,722		479
								42.66	57.44		.50	5.18	75.51	1.41	17.47		7,338	13,268		
12 miles southwest of; NW, ¼ sec. 6, T. 5 N., R. 91 W., Wise mine, Huntington Beach bed, end of 250-foot, entry 8½-foot cut.	9135	B	1	2	3	4	13.28	33.48	45.84	7.40	.51	5.66	69.50	1.05	25.11	10.7	5,836	10,505		479
								38.61	52.96	8.53	.59	5.28	75.98	1.32	16.77		6,729	12,112		
								42.91	57.79		.42	5.83	63.25	1.43	16.77		7,357	13,243		480
Eddy, west of; on Middle Creek sec. 12, T. 5 N., R. 86 W., Hutchinson mine, 9½-foot bed, 10 feet from surface, 5-foot cut.	1832	B	1	2	3	4	12.50	35.15	46.91	5.44	.43	5.07	72.29	1.63	23.63	6.2	6,137	11,047	285	
								40.17	53.61	6.22	.53	5.41	77.08	1.74	15.26		7,014	12,635	297	
								42.83	57.17		.51						7,479	13,462		
												5.44	77.47	1.75	15.54	4.1	7,506	13,511	285	480
7 miles southwest of; on Trout Creek, sec. 14, T. 4 N., R. 86 W., 40 feet from entrance, 6-foot bed, 5½-foot cut.	1831	B	1	2	3	4	8.59	33.85	47.30	10.26	1.50								297	
								37.03	51.75	11.22	1.61								415	
								41.71	58.29		1.86									
Hamilton, 3 miles southeast of; sec. 24, T. 5 N., R. 91 W., Hamilton mine, 160 feet in, 68-inch cut.	*9136	B	1	2	3	4	12.47	29.65	48.08	9.76	.84	5.66	60.40	1.36	22.15	9.7	5,918	10,652	415	480
								33.89	54.92	11.19	1.08	4.76	69.01	1.41	12.64		6,761	12,170		
								38.16	61.81		.93	5.36	77.71	1.62	14.23		7,613	13,703		481
Hayden, about 6 miles south of; on Sage Creek, sec. 36, T. 6 N., R. 88 W., Barnes mine, 300 feet from mouth, 6½-foot bed, 6½-foot cut.	2033	B	1	2	3	4	11.23	41.76	47.52	4.18	1.00								285	
								47.76	53.53	4.71	1.80								297	
								43.82	67.18		1.89								415	

a Certain cities and towns now included in Moffat County are here listed under Routt County.

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.				Ultimate.				Calorific value.		Reference.				
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.		Air- dry- loss.	Calo- ries.	British thermal units.	Page of this bulle- tin.
COLORADO—Continued.																	
ROUTE COUNTY—continued.																	
Hayden —Continued.																	
6 miles south of; on Sage Creek, sec. 2, T. 5 N., R. 88 W., entire 11½-foot bed.	2032	B	1	11.03	35.85	47.46	5.66	0.52	.....	.....	.....	.....	2.7	6,314	11,365	285	481
			2	.....	40.29	53.35	6.36	.58	.....	.....	.....	.....	.....	7,097	12,775	297	
			3	.....	43.02	56.98	.....	.62	.....	.....	.....	.....	.....	7,579	13,642	415	
7 miles south of; N.E. ¼ sec. 4, T. 5 N., R. 88 W., Dry Creek mine, 10-foot 11-inch bed, 94-inch cut.	2082	B	1	15.74	33.37	46.77	4.12	.41	.....	.....	.....	.....	9.2	.....	.....	285	482
			2	.....	33.60	55.51	4.89	.40	.....	.....	.....	.....	.....	.....	.....	297	
			3	.....	41.63	58.37	.....	.52	.....	.....	.....	.....	.....	.....	.....	415	
8 miles east of; sec. 15, T. 6 N., R. 87 W., Wadga mine, Wadga 8½-foot bed (new drift).	2034	B	1	10.59	36.75	47.53	5.13	.44	.....	.....	.....	.....	4.0	.....	.....	285	482
			2	.....	41.10	53.16	5.74	.49	.....	.....	.....	.....	.....	.....	.....	297	
			3	.....	43.60	56.40	.....	.52	.....	.....	.....	.....	.....	.....	.....	415	
Same (old drift, 250 feet in).....	2030	B	1	9.49	37.89	47.04	5.58	.41	.....	.....	.....	.....	2.4	6,494	11,017	285	482
			2	.....	41.86	51.97	6.17	.45	.....	.....	.....	.....	.....	7,181	12,830	297	
			3	.....	44.61	55.39	.....	.48	.....	.....	.....	.....	.....	7,599	13,578	285	482
12 miles southwest of; on Hayden Gulch, sec. 12, T. 4 N., R. 89 W., Green mine, Green bed, 10-foot cut.	2210	B	1	11.34	34.49	49.37	4.60	.50	.....	.....	.....	.....	3.4	.....	.....	297	
			2	.....	38.30	55.91	5.19	.56	.....	.....	.....	.....	.....	.....	.....	415	
			3	.....	41.03	58.97	.....	.59	.....	5.51	64.99	1.41	23.03	6,320	11,376	.....	482
Same (7-foot cut).....	9693	B	1	12.20	35.80	47.38	4.62	.44	.....	.....	.....	.....	.....	.....	.....	.....
			2	.....	42.04	56.96	5.26	.50	.....	4.73	74.02	1.61	13.88	7,198	12,966	.....
			3	.....	43.33	46.73	5.82	.53	.....	4.99	78.13	1.70	14.65	7,597	13,675	.....
14 miles east of; on Butcherknife Creek, sec. 1, T. 6 N., R. 87 W., Gartman mine, 30 feet from entrance, 5½-foot cut.	2031	B	1	10.92	36.53	46.73	5.82	.60	.....	.....	.....	.....	3.4	.....	.....	285	483
			2	.....	41.01	52.46	6.53	.77	.....	.....	.....	.....	.....	.....	.....	297	
			3	.....	43.88	56.12	.....	.90	.....	.....	.....	.....	.....	.....	.....	415	
Lay , south of; sec. 31, T. 7 N., R. 93 W. (Peacock 9-foot bed, 7½-foot cut).	3461	B	1	13.31	35.18	46.53	4.98	.90	.....	.....	.....	.....	4.5	.....	.....	285	483
			2	.....	40.58	53.63	5.74	1.04	.....	.....	.....	.....	.....	.....	.....	341	
			3	.....	43.05	56.95	.....	1.10	.....	.....	.....	.....	.....	.....	.....	415	
Same, Sweeney prospect (Sweeney 14½-foot bed, 48-inch cut).	3462	B	1	12.31	36.17	45.40	6.12	1.10	.....	5.75	62.72	1.16	23.15	6,163	11,083	341	484
			2	.....	37.15	46.40	6.12	1.25	.....	4.99	71.53	1.32	13.93	7,028	12,650	.....
			3	.....	41.25	51.77	6.98	1.35	.....	5.37	76.89	1.42	14.97	7,555	13,599	.....
			4	.....	44.34	55.66	.....	1.35	.....	5.44	77.94	1.44	15.18	7,697	13,729	.....
Same, Wisconsin mine (21½-foot bed, lower bench, 67-inch cut).	3463	B	1	14.65	34.73	44.48	6.14	.99	.....	5.80	60.07	1.10	25.90	5,869	10,564	.....	484
			2	.....	40.09	52.12	7.19	1.16	.....	4.89	70.38	1.29	15.09	6,876	12,377	.....
			3	.....	43.85	56.15	.....	1.25	.....	5.26	75.84	1.39	16.26	7,410	13,388	.....
			4	.....	.....	.....	.....	.....	.....	5.33	76.80	1.41	16.46	7,476	13,457	.....

Oak Creek, south of Eddy, 12 miles northwest of Yampa, Oak Creek mine (700 feet northwest of opening, south slope, Yampa bed, 70½-inch bed).	915D	A	1	2	3	6.43	37.36	47.58	8.63	1.53	5	485
Same (face of main slope, 725 feet northwest of opening).	916D	A	1	2	3	6.16	38.12	47.92	7.80	1.10	5	485
Same (run of mine).	971D	C	1	2	3	7.53	44.30	55.70	10.65	1.51	5	485
7 miles south of Eddy; sec. 30, T. 4 N., R. 85 W., Shuster mine (114-foot bed, 80½-inch cut).	1799	B	1	2	3	8.85	36.06	50.19	4.90	1.51	297	485
Pool, 1 mile south of; sec. 9, T. 6 N., R. 86 W., McCroskey mine, (47-inch cut, lower bench).	1991	B	1	2	3	12.36	36.02	43.17	8.45	.53	297	486
Same (87½-foot cut).	1843	B	1	2	3	12.03	34.51	42.79	10.67	.47	285	415
Quaker Mountain, sec. 26, T. 9 N., R. 87 W., Egeria mine, weathered (87-inch cut).	3436	B	1	2	3	30.28	38.70	25.87	5.15	.60	297	486
Slater, 5 miles east of; SL. ¼ NE. ¼ sec. 18, T. 12 N., R. 88 W., Luckisinger opening, from breast of main entry (82-inch cut).	6043	B	1	2	3	12.95	35.69	46.06	6.34	.65	415	486
WELD COUNTY.												
Dacono, Golden Ash mine (1,100 feet west of shaft, 61-inch cut).	350D	A	1	2	3	23.50	36.24	30.06	4.20	.34	368	487
Same (1,100 feet north of shaft, 6-foot cut).....	351D	A	1	2	3	24.52	34.04	37.56	3.88	.30	368	487
Same (run of mine, 33 tons).....	363D	C	1	2	3	22.20	39.23	33.12	5.45	.42	368	.....
Eaton, 1 mile east of; sec. 32, T. 7 N., R. 65 W., Star mine (325 feet southeast of foot of shaft, 34½-inch cut).	6406	B	1	2	3	31.41	28.11	35.13	5.35	.46	381	487
Erie, 3½ miles northeast of; sec. 33, T. 2 N., R. 68 W., Ideal mine, lower bench, 300 feet west of foot of slope, 100 feet of cover, 6½-foot cut.	6374	B	1	2	3	21.05	31.16	44.18	3.61	.38	381	487
1 mile northeast of; sec. 19, T. 1 N., R. 68 W., Lehigh mine (750 feet north of foot of shaft, over 100 feet below surface, 67-inch cut).	6841	B	1	2	3	22.94	29.18	44.42	3.46	.37	381	488
Fort Lupton, 8 miles west of; sec. 30, T. 2 N., R. 67 W., Warwick mine (165 feet south of foot of shaft, 54-inch cut).	6375	B	1	2	3	25.61	27.99	41.06	5.34	.36	381	488
			1	2	3	37.63	55.19	7.18	.48	.40	381	488

ILLINOIS.																			
CLINTON COUNTY.																			
2856	A	Germanatown, half mile east of; Southern No. 10 mine, No. 6 bed (2,100 feet north of shaft, back north entry 4-foot 7½-inch cut).	1	11.64	35.41	44.29	8.66	3.41										332	491
			2	40.07	40.07	50.13	9.80	3.86										13	
			3	41.62	41.62	52.58		4.28										493	
2857	A	Same (2,200 feet northwest of shaft, west entry 6, 4½-foot cut).	1	12.15	35.60	42.97	9.28	4.01										332	491
			2	40.52	40.52	48.92	10.56	4.56										493	
			3	45.31	45.31	51.69		5.13										493	
2901	C	Same (lump, over 1½-inch screen).....	1	11.35	34.02	40.03	13.40	3.70	5.41	57.36	1.05	18.02	5.9	5.003	10.733			332	
			2	33.05	33.05	45.83	13.12	3.37	4.68	64.70	1.18	8.95		7,054	14.253			493	
			3	46.00	46.00	54.00		6.33	5.81	81.37	1.49	11.25		8,306	14.951			491	
2854	A	New Baden, Southern No. 9 mine, No. 6 bed (400 feet northwest of shaft, north entry 1 of west entry 1, 7½-foot cut).	1	13.43	33.02	44.37	9.18	3.35										332	491
			2	38.14	38.14	51.26	10.60	3.87										13	
			3	42.06	42.06	57.34		4.33										493	
2855	A	Same (500 feet northeast of shaft, room 4, east entry 1 of north entry 1, 6-foot 7½-inch cut).	1	12.73	33.35	44.32	9.00	3.00										332	491
			2	38.21	38.21	50.79	11.00	4.04										13	
			3	42.93	42.93	57.77		4.61	5.39	60.06	1.02	17.88	7.4	6,088	10.958			332	
2972	C	Same (lump, over 5½-inch bar screen).....	1	11.44	33.93	43.92	10.71	4.94	4.65	67.82	1.15	8.71		6,874	12.373			492	
			2	38.31	38.31	49.00	12.09	5.38	5.29	77.15	1.31	9.90		7,820	14.076			23	
			3	43.53	43.53	56.42		6.35	5.64	82.37	1.43	10.56	4.7	8,198	14.756			332	492
4384	A	Trenton, South Trenton mine, Belleville, No. 6 bed (1,800 feet west of shaft, room 5, south entry 2 of east entry 10, 5-foot 5½-inch cut).	1	14.45	29.76	46.16	9.63	2.69										23	
			2	34.79	34.79	53.95	11.26	2.44										492	
			3	31.20	31.20	62.80		2.75										23	
4385	A	Same (2,000 feet northwest of shaft, room 1, north entry 7 of west entry 5, 4-foot 11½-inch cut).	1	15.06	29.48	45.81	9.65	1.05										332	492
			2	34.71	34.71	53.93	11.36	1.24										23	
			3	39.16	39.16	60.84		1.40										23	
FRANKLIN COUNTY.																			
1695	A	Benton, Benton mine, No. 6 bed, main entry (80 feet south of shaft, 9-foot 2-inch cut.)	1	10.28	32.04	49.74	7.94	1.06										290	493
			2	35.71	35.71	55.44	8.85	1.18										13	
			3	39.18	39.18	67.82		1.29										23	
1694	A	Same (100 feet north of shaft, cut 9 feet 11½ inches).	1	9.46	33.55	48.87	8.12	1.63										290	493
			2	37.06	37.06	53.97	8.97	1.80	1.47									13	
			3	40.71	40.71	59.29		1.98	1.55									13	
1786	C	Same (egg, through 6-inch screen and over 1½-inch screen).	1	8.31	31.65	49.56	10.48	1.55	5.18	65.83	1.48	15.48	4.6	6,515	11.727			290	
			2	34.52	34.52	54.05	11.43	1.69	4.65	71.80	1.61	8.82		7,105	12.789				
			3	38.98	38.98	61.02		1.91	5.24	81.12	1.82	9.91		8,028	14.450				
477D	A	Sesser, Keller mine, No. 6 bed (980 feet northwest of shaft, 6½-foot cut).	1	9.15	34.98	47.27	8.60	.99										5	494
			2	38.50	38.50	52.03	9.47	1.09											
			3	42.53	42.53	57.47		1.20											
478D	A	Same (1,220 feet north of shaft, 6½-foot cut).....	1	8.59	32.15	51.03	8.23	1.29										5	494
			2	35.17	35.17	55.83	9.00	1.41											
			3	38.65	38.65	61.35		1.55											
495D	C	Same (1½-inch screenings).....	1	8.61	33.19	46.82	11.38	.95	5.15	64.93	1.36	16.23	3.3	6,436	11.585			5	
			2	36.32	36.32	51.23	12.45	1.04	4.58	71.05	1.49	9.39		7,042	12.676				
			3	41.48	41.48	58.52		1.19	5.23	81.15	1.70	10.73		8,043	14.477				
480D	C	Same (run of mine).....	1	8.12	34.46	48.79	8.63	1.13	5.26	66.44	1.33	17.21	3.6	6,702	12.064			5	
			2	37.51	37.51	53.10	9.39	1.23	4.73	72.31	1.45	10.89		7,295	13.131				
			3	41.40	41.40	58.60		1.36	5.22	79.80	1.60	12.02		8,051	14.492				

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.				Ultimate.				Calorific value.		Reference.				
	Laboratory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- loss.	Calo- ries.	British thermal units.	Bul- letin No.	Page of this bulle- tin.	
ILLINOIS—Continued.																	
FRANKLIN COUNTY—continued.																	
West Frankfort, West Frankfort mine, No. 6 bed (slack).	1648	C	1	9.50	31.98	47.08	11.44	1.45	63.83	1.36	16.61	6.9	6,392	11,506	290	.....
			2	.....	35.34	52.02	12.64	1.60	4.70	1.50	9.03	.....	7,063	12,713		.....
			3	40.45	59.55	1.83	5.38	80.74	1.72	10.33	8,085	14,553	
			4	5.49	82.24	1.75	10.52	8,194	14,749	
Zeigler, Zeigler mine, No. 6 bed (680 feet northwest of shaft, room 5, west entry 1, north side, 94½-inch cut).	1871	A	1	9.90	28.67	53.69	7.74	.48	.....	1.47	.....	5.2	6,407	12,001	293	494
			2	.....	31.82	59.59	8.59	.53	.....	1.55	.....	.....	7,400	13,320	13	.....
Same (1,030 feet southwest of shaft, room 5, west entry 3, south side, 94½-inch cut).	1872	A	1	10.53	29.06	53.01	7.40	.47	.....	1.69	.....	5.6	8,095	14,571	23	494
			2	.....	32.48	59.25	8.27	.53	.....	.....	.....	.....	.....	.....	.....	.....
			3	.....	35.41	64.59	.....	.58	.....	.....	.....	.....	.....	.....	.....	.....
Same (1,500 feet southwest of shaft, room 6, west entry 3, 11-foot 2-inch cut).	3408	A	1	9.65	30.87	53.23	6.25	.45	.....	.....	.....	.....	.....	.....	.....	.....
			2	.....	34.17	58.91	6.92	.50	.....	.....	.....	.....	.....	.....	.....	.....
			3	.....	36.71	63.29	.....	.54	.....	.....	.....	.....	.....	.....	.....	.....
Same (over ¾-inch perforated screen).....	1926	C	1	14.91	26.66	49.50	8.93	.52	5.42	1.35	21.02	9.1	6,088	10,958	290	.....
			2	.....	31.33	58.18	10.49	.61	4.42	1.59	9.13	.....	7,155	12,879		.....
			3	.....	35.00	65.00	.....	.68	4.97	1.78	10.28	.....	7,994	14,389		.....
			4	.....	.....	.....	.....	.....	8.97	1.76	10.28	.....	8,092	14,408		.....
Same (3-inch, over 1½-inch screen).....	2020	C	1	10.72	29.86	50.06	9.36	.91	5.30	1.40	16.29	5.6	6,492	11,686	290	.....
			2	.....	33.45	56.07	10.48	1.02	4.60	1.74	7.58	.....	7,271	13,088		.....
			3	.....	37.37	62.63	.....	1.14	5.14	1.83	8.46	.....	8,123	14,621		.....
			4	.....	.....	.....	.....	.....	5.20	1.84	16.39	3.8	8,190	14,742		.....
Same (run of mine).....	3447	C	1	9.58	29.18	50.24	11.00	.52	5.33	1.43	16.39	.....	6,348	11,428		.....
			2	.....	32.27	55.56	12.17	.58	4.72	1.58	8.70	.....	7,018	12,632		.....
			3	.....	36.74	63.26	.....	.66	5.37	1.80	9.91	5.8	7,991	14,384		.....
Same (No. 2 nut).....	3448	C	1	9.45	23.49	51.99	9.07	.60	4.89	1.66	17.51	.....	6,497	11,695		.....
			2	.....	32.57	57.41	10.02	.66	4.24	1.73	10.06	.....	7,175	12,915		.....
			3	.....	36.20	63.80	.....	.73	4.71	1.80	11.18	.....	7,974	14,553		.....
Same (6-inch lump).....	3451	C	1	8.30	30.23	50.90	10.57	.52	4.75	1.61	10.88	.....	6,413	11,543		.....
			2	.....	32.97	55.50	11.53	.57	4.18	1.71	11.23	.....	7,904	14,587		.....
			3	.....	37.26	62.74	.....	.64	4.72	1.82	12.31	.....	6,993	12,587		.....
Same (1,600 feet south and 475 feet east of opening, east entry 6 off right entry 1, south side, 91½-inch cut).	5214	A	1	11.82	27.66	55.10	5.42	.46	5.44	1.34	19.47	4.5	7,904	14,227		494	
			2	.....	31.37	62.47	6.16	.52	4.49	1.52	10.35	.....	6,645	11,961		.....
			3	.....	33.43	66.57	.....	.56	4.99	1.62	10.82	.....	7,535	13,565		.....
				.....	.....	.....	.....	.....	82.01	1.62	10.82	.....	8,029	14,452		.....

5237	A	Same (1,000 feet north and 550 feet west of opening, west entry 2 off right entry 1, north lace, 89-inch cut).	1	11.50	26.70	52.67	9.13	.60	5.28	65.40	1.08	18.51	6.4	6,339	11,410	494
			2	30.17	59.51	10.32		.68	4.52	73.89	1.22	9.37		7,163	12,883	
			3	33.64	66.36			.76	5.04	82.39	1.36	10.45		7,987	14,377	
4345	A	St. David, Big Creek No. 2 mine No. 5 bed (2,200 feet northwest of opening, 53½-inch cut).	1	15.27	32.91	41.46	10.36	3.01					11.7			495
			2	38.84	48.93	12.23		3.55								
			3	44.25	55.70			4.04					8.1	5,900	10,620	495
4346	A	Same (north entry 10, off west entry 2, 2,500 feet from mouth of drift, 53½-inch cut).	1	15.67	31.43	43.70	9.80	2.99						6,995	12,563	
			2	37.28	51.11		11.61	3.55						7,916	14,249	
			3	42.18	57.82											
1741	A	La Salle, La Salle shaft mine, No. 2 bed (west entry 12 off north entry, 4,000 feet north of shaft, 39-inch cut).	1	13.87	37.26	38.56	10.31	3.44					11.0	6,103	10,985	496
			2	43.26	44.77	11.97		3.99						7,086	12,755	13
			3	49.14	50.86			4.53						8,049	14,486	23
1742	A	Same (east entry 3 off south entry 3, 4,000 feet southeast of shaft, 42-inch cut).	1	15.55	36.21	40.66	7.58	3.01					11.2			496
			2	42.88	48.14	8.98		3.56								13
			3	47.11	52.89	3.91							8.4	6,333	11,399	23
1779	C	Same (lump, over 6-inch mesh screen).....	1	12.39	36.89	41.80	8.92	3.92	5.85	61.29	1.00	10.02		7,229	13,012	290
			2	42.11	47.71	10.18		4.47	5.10	69.66	1.14	9.15		8,018	14,486	
			3	46.88	53.12			4.98	5.68	77.89	1.27	10.18		8,352	15,034	
			4						5.98	81.97	1.54	10.71				
2881	A	LOGAN COUNTY. Lincoln, Latham mine, No. 5 (58½-inch) bed (1,500 feet southeast of shaft, room 11, stub entry 3, 57½-inch cut).	1	14.77	32.90	39.75	12.58	3.95					11.3	5,781	10,406	497
			2	38.00	46.64	14.76		4.63						6,783	12,209	13
			3	45.28	54.72			5.43						7,957	14,323	23
2882	A	Same (1,000 feet northeast of shaft, room 1, main entry 3, main cross entry 1, northwest side).	1	15.52	32.27	39.86	12.35	3.65					12.1			497
			2	38.20	47.18	14.62		4.32								13
			3	44.74	55.26			5.06								23
3003	C	Same (run of mine).....	1	15.68	32.41	39.82	12.09	3.51	5.56	56.76	1.06	21.02		5,743	10,337	332
			2	38.44	47.22	14.34		4.16	4.53	67.31	1.25	8.40		6,811	12,209	
			3	44.87	55.13			4.86	5.29	78.58	1.47	9.80		7,951	14,312	
			4						5.56	82.59	1.54	10.31		8,242	14,836	
3044	A	M'LEAN COUNTY. Chenosa, Chenosa mine (300 feet northeast of shaft, room 1, entry 1 east of north, 43-inch cut).	1	10.25	35.88	40.11	13.76	2.80					7.6	6,194	11,149	497
			2	39.98	44.69	15.33		3.12						6,901	12,422	
			3	47.22	52.78			3.69						8,150	14,670	
3045	A	Same (250 feet northwest of shaft, room 6, entry 4 west of north, 34-foot cut).	1	9.88	35.69	38.22	15.91	3.15					7.0			497
			2	39.93	42.42	17.65		3.50								
			3	48.49	51.51			4.25								
1625	A	MACOUPIN COUNTY. Staunton, No. 2 mine, No. 6 bed (room 11 off north entry 1, 71½-inch cut).	1	13.29	37.07	40.74	8.90	4.12					7.7	6,201	11,162	498
			2	42.75	46.99	10.26		4.75						7,151	12,872	13
			3	47.64	52.36			5.29						7,969	14,344	23
1626	A	Same (main air course, 82½-inch cut).....	1	15.27	36.19	39.34	9.20	3.70					7.7			498
			2	42.71	46.43	10.86		4.37								13
			3	47.91	52.69			4.90								23

	1722	C	1	2	3	10.69	33.08	36.14	20.09	4.06	4.95	53.40	.89	16.61	7.6	5.396	9.713	.....
Collinsville, No. 2 mine, ear of slack.....			1	2	3	37.04	37.04	40.47	22.49	4.55	4.21	52.79	1.09	7.96	7.6	5.396	9.713	.....
Donkville, No. 1 mine, No. 6 bed (3,800 feet northeast of shaft, north entry 5 off east entry 6, 68½-inch cut).	2774	A	1	2	3	13.07	34.85	42.02	10.08	5.87	5.43	77.13	1.29	10.27	8.9	6.042	10,876	409
Same (4,000 feet northwest of shaft, north entry 5 off west entry 6, 40½-inch cut).	2775	A	1	2	3	46.09	46.09	48.34	11.57	4.67	.....	.....	.....	.....	.....	6,083	13,030	332
Same (lump, over 5-inch screen).....	2819	C	1	2	3	12.79	35.67	40.25	11.29	3.94	.....	.....	.....	.....	9.7	6,998	12,596	409
Same (slack, through 2-inch screen).....	2893	C	1	2	3	46.90	46.90	46.15	12.95	5.19	5.63	57.61	.91	19.91	11.5	6,839	10,510	332
Same (slack, through 2-inch screen).....	2893	C	1	2	3	34.35	34.35	40.65	11.53	4.41	4.77	66.58	1.05	10.59	.....	6,748	12,126	332
Livingston, New Staunton mine, No. 6 bed (1,600 feet south of shaft, south entry 6, 82½-inch cut).	3911	A	1	2	3	45.80	45.80	54.20	13.32	5.88	5.51	76.81	1.21	10.59	.....	7,785	14,013	332
Same (1,200 feet northwest of shaft, back west entry, 70½-inch cut).	3913	A	1	2	3	31.28	37.45	15.59	8.76	3.08	5.42	81.62	1.29	21.22	13.2	8,133	14,639	332
Same (screenings, through 2-inch screen).....	3963	C	1	2	3	45.51	45.51	54.49	18.49	4.72	5.35	62.72	1.07	10.61	.....	5,364	9,635	.....
Same (run of mine, sample 1).....	3958	C	1	2	3	35.62	35.62	40.79	9.44	3.72	5.20	54.26	.89	19.42	8.6	6,051	10,657	332
Same (run of mine, sample 2).....	3980	C	1	2	3	41.55	41.55	46.17	16.00	4.17	4.37	62.44	1.02	8.96	.....	7,057	12,703	332
Maryville, No. 2 mine, No. 6 bed (3,000 feet south of shaft, main south entry, 97-inch cut).	2772	A	1	2	3	33.12	33.12	41.85	12.56	4.37	5.36	76.53	1.26	10.97	.....	7,929	14,272	332
Same (2,500 feet north of shaft, east entry 9, 93½-inch cut).	2773	A	1	2	3	37.84	37.84	47.81	14.35	4.99	5.69	81.31	1.33	11.67	7.3	5,926	10,667	332
Same (lump, over 4-inch screen).....	2905	C	1	2	3	44.18	44.18	55.82	15.82	5.83	5.37	57.17	1.00	19.53	.....	8,170	14,706	.....
Same (nut, pea, and slack, through 2-inch screen).	2896	C	1	2	3	33.76	33.76	41.60	12.33	4.42	5.31	65.31	1.33	11.27	.....	7,770	12,186	.....
Troy, 1 mile west of No. 3 mine, No. 6 bed (room 15 off west entry 5, north side of shaft, 62-inch cut).	1341	A	1	2	3	38.47	38.47	47.48	14.05	5.04	5.44	58.30	.80	18.71	5.5	6,786	12,215	.....
			1	2	3	44.76	44.76	55.24	16.00	5.86	5.41	77.30	1.06	10.37	.....	7,896	14,213	.....
			1	2	3	13.51	34.61	41.70	10.15	4.01	5.75	82.11	1.13	11.01	9.2	6,045	10,881	332
			1	2	3	40.65	40.65	48.21	11.74	4.04	.....	.....	.....	.....	.....	6,989	12,580	501
			1	2	3	45.38	45.38	54.02	14.77	5.26	.....	.....	.....	.....	9.9	7,919	14,254	501
			1	2	3	34.16	34.16	42.24	9.77	4.10	.....	.....	.....	.....	.....	.....	.....	.....
			1	2	3	39.64	39.64	49.02	11.34	4.76	.....	.....	.....	.....	.....	.....	.....	.....
			1	2	3	44.71	44.71	55.29	15.01	5.38	5.31	57.35	1.00	18.09	5.9	5,897	10,615	.....
			1	2	3	35.65	35.65	39.43	13.01	5.31	4.42	65.10	1.14	8.51	.....	6,694	12,049	.....
			1	2	3	40.47	40.47	44.76	14.77	4.06	5.18	76.58	1.33	10.00	.....	7,854	14,137	.....
			1	2	3	47.48	47.48	52.62	16.71	7.11	5.08	82.94	1.43	10.75	.....	8,283	14,909	.....
			1	2	3	32.65	32.65	39.79	14.53	4.35	3.25	55.61	.89	19.04	11.2	5,662	10,192	.....
			1	2	3	37.54	37.54	45.75	16.71	5.01	4.37	74.32	1.02	8.58	.....	6,510	11,718	.....
			1	2	3	45.07	45.07	54.93	16.71	6.01	5.25	77.23	1.23	10.28	.....	7,816	14,069	.....
			1	2	3	31.00	31.00	46.49	7.42	.83	.....	.....	.....	.....	3.2	8,173	14,711	502
			1	2	3	36.51	36.51	54.75	8.74	.98	.....	.....	.....	.....	.....	7,296	13,133	48
			1	2	3	40.01	40.01	50.99	1.15	.....	.....	.....	.....	.....	.....	7,994	14,389	.....

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.		Reference.			
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile car- bon.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.		Calo- ries.	British thermal units.	
ILLINOIS—Continued.																	
MADISON COUNTY—continued.																	
Troy, No. 3 mine—Continued.																	
Same (room 16 off east entry 5, south side of shaft, 60½-inch cut).	1342	A	1	14.42	32.18	44.59	8.81	1.52						3.0		13	502
			2		37.60	52.11	10.29	1.78								23	
			3		41.91	58.09		1.98							6.002	10.804	261
Same (lump, over 2-inch screen, 22 tons).....	1417	C	1	12.91	31.90	43.55	11.64	1.32	5.43	69.74	1.15	19.72	1.7	6.892	12.406	48	
			2		36.63	50.00	13.37	1.52	4.50	80.50	1.32	9.46		7.955	14.319		
			3		42.28	57.72		1.75	5.40	81.94	1.55	11.11		8.056	14.501		
			4	15.23	31.42	44.32	9.03	1.59								332	502
Same (1,500 feet southeast of shaft, room 22 off east entry 5, south side, 54-inch cut).	2770	A	1		37.06	52.29	10.65	1.88						10.5	6.056	10.901	13
			2		41.48	58.52		2.10							7.144	12.859	13
Same (800 feet northwest of shaft, room 26 off west entry 3, north side, 5½-foot cut).	2771	A	1	17.79	28.78	42.34	11.09	1.40							7.998	14.396	23
			2		35.01	51.30	13.49	1.70					13.3			332	502
			3		40.47	59.53		1.97								13	
Same (lump, over 2½-inch screen, sample 1)....	2852	C	1	15.54	31.26	42.27	10.93	1.38	5.59	58.02	1.09	22.99	10.4	5.837	10.507	23	
			2		37.01	50.05	12.94	1.63	4.57	68.69	1.29	10.88		6.910	12.438	332	
			3		42.51	57.49		1.88	5.25	78.91	1.48	12.48		7.938	14.288		
			4						5.35	80.42	1.51	12.72		8.048	14.486		
Same (lump, over 2½-inch screen, sample 2)....	2920	C	1	15.30	30.59	43.40	10.71	1.43					8.2			332	
			2		36.12	51.24	12.64	1.69									
			3		41.35	58.65		1.93									
MARION COUNTY.																	
Centrella, South mine, No. 6 bed (3,000 feet southeast of shaft, east entry 16, 8½-inch cut).	1725	A	1	10.25	37.43	39.79	12.53	3.70					7.2	6.154	11.077	290	503
			2		41.70	44.34	13.96	4.12						6.837	12.343	13	
Same (4,500 feet southwest of shaft, south entry 14, 5-foot 4½-inch cut).	1726	A	1	11.88	35.84	51.54	8.83	3.25					7.8	7.969	14.344	23	
			2		40.67	49.31	10.02	3.69								290	503
			3		45.21	54.79		4.10								13	
Same (lump, over 6-inch screen).....	1761	C	1	9.95	34.76	42.06	13.23	3.87	5.25	59.04	1.04	16.97	4.2	6.089	10.960	23	
			2		38.60	46.71	14.69	4.30	4.60	66.23	1.15	9.03		6.762	12.172	290	
			3		45.25	54.75		5.04	5.39	77.63	1.35	10.59		7.926	14.267		
			4						5.67	81.75	1.43	11.15		8.228	14.810		

MONTGOMERY COUNTY.									
1061	A	1	12.90	38.77	42.25	11.08	3.78	6.031	290
		2	.....	38.77	48.51	12.72	4.34	6.954	10,856
1449	A	3	.....	44.42	55.58	.....	4.97	7.933	12,453
		1	14.89	34.80	42.44	7.87	3.61	6,120	11,016
		2	.....	40.89	49.80	9.25	4.24	7,191	12,944
		3	.....	45.06	54.94	.....	4.07	7,191	14,201
1450	A	1	13.94	33.93	41.23	10.91	3.79	7,923	13,203
		2	.....	39.43	47.80	12.68	4.40	.....	23
		3	.....	45.15	54.85	.....	.....	.....	48
1557	C	1	14.43	29.48	42.81	13.28	4.01	5,591	10,064
		2	.....	34.45	50.03	15.62	4.69	6,534	11,761
		3	.....	40.78	59.22	.....	5.55	7,794	13,921
1702	C	1	11.93	29.99	43.90	14.18	4.29	8,057	14,303
		2	.....	34.05	49.85	16.10	4.87	5,724	10,303
		3	.....	40.58	59.42	.....	5.81	6,499	11,698
1627	C	1	13.20	34.33	39.91	12.53	4.17	7,746	13,943
		2	.....	39.53	46.01	14.41	5.15	8,085	14,553
		3	.....	46.23	53.77	.....	6.02	5,811	10,514
		4	.....	.....	.....	.....	.....	6,729	12,112
		5	.....	.....	.....	.....	.....	7,864	14,155
		6	.....	.....	.....	.....	.....	8,223	14,801
ST. CLAIR COUNTY.									
1065	A	1	11.17	39.31	39.20	10.32	4.22	6,235	11,223
		2	.....	44.25	44.13	11.62	4.75	7,019	12,634
		3	.....	50.77	49.03	10.07	5.37	7,942	14,296
1096	A	1	10.06	40.77	39.54	11.20	4.04	.....	.....
		2	.....	44.84	43.96	11.20	5.06	.....	.....
		3	.....	50.49	49.51	.....	.....	6,125	11,025
1261	C	1	9.75	37.48	39.57	13.30	4.10	6,787	12,217
		2	.....	41.53	43.84	14.63	4.54	7,950	14,310
		3	.....	46.65	51.35	.....	5.32	8,270	14,886
		4	.....	.....	.....	.....	.....	8,083	9,149
1152	C	1	12.03	31.86	33.67	22.44	4.00	5,778	10,400
		2	.....	36.22	38.27	23.51	4.55	7,757	13,963
		3	.....	48.63	51.37	.....	6.10	8,115	14,607
		4	.....	.....	.....	.....	.....	.....	.....
		5	.....	.....	.....	.....	.....	.....	.....
3910	A	1	10.73	39.60	40.41	9.26	4.12	.....	.....
		2	.....	44.36	46.27	10.37	4.62	.....	.....
		3	.....	49.49	50.51	.....	.....	6,335	11,439
3912	A	1	9.88	42.26	37.05	10.81	3.53	7,052	12,694
		2	.....	46.89	41.12	11.99	4.25	8,013	14,423
		3	.....	53.28	46.72	.....	.....	5,944	10,699
4364	C	1	11.69	35.43	39.42	13.19	4.38	6,791	12,116
		2	.....	40.78	44.63	14.94	4.96	7,913	14,243
		3	.....	47.62	52.48	.....	5.83	8,203	14,873
		4	.....	.....	.....	.....	.....	.....	.....
4250	A	1	13.17	34.79	41.75	10.29	3.22	.....	.....
		2	.....	40.07	48.08	11.85	3.71	.....	.....
		3	.....	45.46	54.54	.....	4.21	.....	.....
ST. CLAIR COUNTY.									
O'Fallon, 5½ miles southwest of; No. 1 mine, Belleville, No. 6 bed (1,200 feet north of shaft, 73½-inch cut).	A	1	11.17	39.31	39.20	10.32	4.22	6,235	11,223
Same (1,200 feet south of shaft, 80½-inch cut).....	A	1	10.06	40.77	39.54	11.20	4.04	.....	.....
Same (lump and nut, over 1-inch screen, 15 tons).	C	1	9.75	37.48	39.57	13.30	4.10	6,787	12,217
Same (shuck, 14 tons).....	C	1	12.03	31.86	33.67	22.44	4.00	5,778	10,400
Shiloh, No. 8 mine, No. 6 bed (900 feet southwest of shaft, cross cut off west entry 1, south side, 79½-inch cut).	A	1	10.73	39.60	40.41	9.26	4.12	.....	.....
Same (800 feet northeast of shaft, east entry 3, 65½-inch cut.)	A	1	9.88	42.26	37.05	10.81	3.53	7,052	12,694
Same (nut coal, through 3-inch and over 2-inch shaking screen).	C	1	11.69	35.43	39.42	13.19	4.38	6,791	12,116
Worden, Worden mine, No. 6 bed (900 feet west and 850 feet south of shaft, 6½-foot cut).	A	1	13.17	34.79	41.75	10.29	3.22	.....	.....

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.		Reference.				
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mols- ture.	Vol- atile car- mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.		Calo- ries.	British thermal units.	Bul- letin No.	Page of this bulle- tin.
ILLINOIS—Continued.																		
ST. CLAIR COUNTY—Continued.																		
Worden, Worden mine—Continued. Same (1,400 feet north and 300 feet west of shaft, 80½-inch cut).	4251	A	1	14.38	33.92	42.95	8.75	3.13	.....	.....	.....	.....	9.4	6,032	10,858	332	506
	.....	.....	2	.....	39.62	50.16	10.22	3.66	.....	.....	.....	.....	.....	7,045	12,681	23	.....
	.....	.....	3	.....	44.13	55.87	.....	4.08	.....	.....	.....	.....	.....	7,847	14,125	.....	.....
	4376	C	1	13.10	32.16	41.49	13.25	3.66	5.44	57.31	1.03	19.31	9.7	5,774	10,393	332	.....
Same (screenings through 1½-inch screen).....	.....	.....	2	.....	37.01	47.74	15.25	4.21	4.58	65.95	1.19	8.82	.....	6,644	11,959	.....	.....
	.....	.....	3	.....	43.67	56.33	.....	4.97	5.40	77.82	1.40	10.41	.....	7,840	14,112	.....	.....
	.....	.....	4	.....	.....	.....	.....	.....	5.69	81.88	1.47	10.96	.....	8,133	14,639	.....	.....
	4413	A	1	7.55	33.85	51.45	7.15	1.56	.....	.....	.....	.....	4.2	.....	.....	332	507
Harrisburg, No. 9 mine, No. 5 bed (2,000 feet southwest of shaft, room 25 off west entry 4, south side, 88½-inch cut).	.....	.....	2	.....	36.61	55.66	7.73	1.69	.....	.....	.....	.....	.....	.....	.....	336	.....
	.....	.....	3	.....	33.68	60.32	.....	1.83	.....	.....	.....	.....	.....	.....	.....	23	.....
	4414	A	1	7.51	32.81	52.20	7.48	1.58	.....	.....	.....	.....	5.3	7,048	12,686	332	507
	.....	.....	2	.....	35.47	56.44	8.09	1.71	.....	.....	.....	.....	.....	7,620	13,716	336	.....
Same, 1,200 feet northeast of shaft in room 3, off east entry 6.	7421	A	1	.....	38.59	61.41	6.58	1.86	.....	.....	.....	.....	4.3	8,291	14,924	23	507
	.....	.....	2	7.40	31.28	54.74	6.58	1.86	.....	.....	.....	.....	.....	.....	.....	.....	.....
	.....	.....	3	.....	33.78	59.11	7.11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	7420	A	1	6.98	31.64	53.41	7.97	.....	.....	.....	.....	.....	3.8	.....	.....	.....	507
Same, 3,000 feet southwest of shaft, off west entry 4.	.....	.....	2	.....	34.01	57.42	8.57	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	.....	.....	3	.....	37.30	62.80	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	4622	C	1	7.81	33.54	50.27	8.38	2.36	5.31	67.40	1.44	15.11	5.8	6,899	12,418	332	.....
	.....	.....	2	.....	32.56	53.63	.....	2.56	4.82	73.11	1.56	8.86	.....	7,483	13,469	.....	.....
Same (run of mine).....	.....	.....	3	.....	36.38	54.53	9.09	2.82	5.30	80.42	1.72	9.74	.....	8,232	14,818	.....	.....
	.....	.....	4	.....	40.02	59.98	.....	.....	5.45	82.75	1.77	10.03	.....	8,405	15,129	.....	.....
	4036	C	1	9.33	30.92	47.86	11.89	2.76	5.12	62.85	1.29	16.09	6.6	6,429	11,572	332	.....
	.....	.....	2	.....	34.10	52.79	13.11	3.04	4.50	69.32	1.42	8.61	.....	7,091	12,764	.....	.....
Same (screenings, through 1½-inch screen).....	.....	.....	3	.....	39.25	60.75	.....	3.50	5.18	79.78	1.64	9.90	.....	8,101	14,690	.....	.....
	.....	.....	4	.....	.....	.....	.....	.....	5.37	82.67	1.70	10.26	.....	8,375	15,075	.....	.....
	7501	A	1	6.01	32.37	54.32	7.30	1.66	5.27	71.63	1.34	12.80	3.7	7,107	12,793	6	508	
	.....	.....	2	.....	34.44	57.79	7.77	1.77	4.89	76.21	1.43	7.93	.....	7,561	13,610	.....	.....
No. 4 mine, No. 5 bed, 74½ inches (south entry 8 off main east entry).	.....	.....	3	.....	37.34	62.66	.....	1.92	5.30	82.63	1.55	8.60	.....	8,198	14,756	.....	.....
	7502	A	1	5.56	34.41	51.31	8.72	2.87	5.16	68.75	1.30	13.20	3.6	7,024	12,643	6	508	
	.....	.....	2	.....	36.44	54.33	9.23	3.04	4.81	72.80	1.38	8.74	.....	7,437	13,386	.....	.....
	.....	.....	3	.....	40.15	59.85	.....	3.35	5.30	80.20	1.52	3.69	.....	8,193	14,747	.....	.....

SANGAMON COUNTY.														
A	2897	A	1	14.29	37.17	40.36	8.18	4.41	10.2	6.115	7,134	11,007	332	508
	2		43.37	47.09	9.54	5.15								
	3		47.95	52.05	5.69	5.69								
	4		34.85	41.11	9.86	4.38								
A	2898	A	1	14.18	34.85	41.11	9.86	4.38	10.5	7,887	14,107	332	508	
	2		40.61	47.90	11.49	5.08								
	3		45.88	54.12	5.74	5.74								
	4		32.41	37.82	13.77	4.05								
C	3052	C	1	16.00	32.41	37.82	13.77	4.05	10.8	5,802	12,352	332	509	
	2		38.58	45.03	16.39	4.82								
	3		46.15	53.85	5.77	5.77								
	4		13.89	33.96	40.89	11.26								
A	1704	A	1	39.43	47.49	13.08	4.45	5.12	10.0	5,522	9,940	332	509	
	2		45.36	54.64	10.66	5.12								
	3		34.79	40.10	10.66	5.12								
	4		40.67	46.87	12.46	4.04								
A	1705	A	1	14.45	34.79	40.10	10.66	5.12	11.2	7,894	14,269	332	509	
	2		46.46	53.54	4.61	4.61								
	3		34.08	40.77	11.78	4.16								
	4		39.76	46.74	13.50	4.77								
C	1740	C	1	12.77	34.08	40.77	11.78	4.16	8.0	5,976	10,757	290	510	
	2		45.97	54.03	5.51	5.51								
	3		13.89	33.96	40.89	11.26								
	4		39.43	47.49	13.08	4.45								
WILLIAMSON COUNTY.														
A	1683	A	1	8.29	31.19	49.69	10.83	2.81	5.2	6,576	11,837	290	510	
	2		34.01	54.18	11.81	3.06								
	3		38.56	61.44	11.88	3.63								
	4		34.27	45.44	12.97	3.96								
A	1688	A	1	8.41	34.27	45.44	11.88	3.63	5.6	8,131	14,636	290	510	
	2		37.42	49.61	12.97	3.96								
	3		43.00	57.00	12.95	3.48								
	4		35.14	50.75	14.11	4.41								
C	1762	C	1	8.20	32.26	46.39	12.95	3.48	3.6	6,312	11,302	332	510	
	2		40.91	59.09	14.11	3.79								
	3		12.61	30.08	46.81	10.50								
	4		34.02	53.56	12.02	2.71								
C	3907	C	1	39.12	40.88	10.47	2.31	2.71	12.4	6,011	10,820	332	511	
	2		28.93	45.29	12.36	2.74								
	3		34.16	53.48	12.36	2.74								
	4		38.98	61.02	9.52	2.34								
C	4083	C	1	15.31	28.93	45.29	12.36	2.74	13.3	5,991	10,784	332	511	
	2		38.98	61.02	9.52	2.34								
	3		28.19	46.42	11.32	2.78								
	4		33.51	55.17	11.32	2.78								
C	4201	C	1	15.87	33.51	55.17	11.32	2.78	4.9	8,030	14,454	332	511	
	2		37.79	62.21	9.26	2.82								
	3		33.75	48.69	10.10	3.08								
	4		36.80	53.07	10.10	3.43								
A	1634	A	1	8.30	37.79	48.69	10.10	3.43	4.8	8,086	14,555	290	511	
	2		40.93	59.07	10.61	1.97								
	3		31.44	50.19	11.50	2.41								
	4		34.08	54.42	11.50	2.41								
C	1654	C	1	7.76	34.08	54.42	11.50	2.41	4.8	8,086	14,555	290	511	
	2		38.51	61.49	11.50	2.41								
	3		31.44	50.19	11.50	2.41								
	4		34.08	54.42	11.50	2.41								

Table of chemical analyses—Continued.

Sample.		Proximate.					Ultimate.				Air-drying loss.	Calorific value.		Reference.		
Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile car- mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Calo- ries.	British thermal units.	Bul- letin No.	Page of this bulle- tin.	
Locality, bed, etc.																
ILLINOIS—Continued.																
WILLIAMSON COUNTY—continued.																
Cartersville, Daw's shaft.—Continued.																
Same (mixed run-of-mine and lump coal).....																
1660	C	1	8.86	31.25	48.23	11.66	2.46	5.24	64.29	1.29	15.06	6,501	11,702	290	.....
		2	.....	34.29	52.92	12.79	2.70	4.67	70.54	1.42	7.88	7,133	12,839	.....	.....
		3	.....	39.32	60.68	.....	3.10	5.36	80.89	1.62	9.03	8,180	14,724	.....	.....
Same (sizes 4 and 5 mixed, washed).....																
1718	C	4	8.61	32.40	51.33	7.66	1.65	5.38	83.47	1.68	9.32	8,369	15,064	290	.....
		1	.....	35.45	56.17	8.38	1.81	4.84	74.56	1.47	8.94	6,798	12,236	.....	.....
		2	.....	38.69	61.31	.....	1.97	5.28	81.38	1.60	9.77	7,438	13,388	.....	.....
Same (egg coal).....																
1653	C	4	7.64	32.12	49.80	10.44	2.01	5.38	83.02	1.63	9.97	8,237	14,827	.....	.....
		1	.....	34.78	53.92	11.30	2.18	5.18	66.64	1.41	14.32	6,633	11,939	.....	.....
		2	.....	39.20	60.80	.....	2.46	4.69	72.15	1.53	8.15	7,182	12,928	.....	.....
Same.....																
1802	C	3	10.14	30.99	51.43	7.44	1.52	5.29	81.33	1.72	9.20	8,097	14,575	.....	.....
		1	34.49	57.23	8.28	1.69	5.46	67.86	1.47	16.25	4.1	7,331	12,116
		2	.....	37.60	62.40	.....	1.84	5.26	82.33	1.79	8.78	8,166	14,699	.....	.....
5238	A	3	9.18	27.30	55.40	8.12	.90	5.10	68.45	1.14	16.29	5.4	9,675	12,015	512
		1	.....	30.06	61.00	8.94	.99	4.99	75.37	1.26	8.95	7,350	13,230	.....	.....
		3	.....	33.01	66.99	.....	1.09	4.93	82.77	1.38	9.83	8,072	14,530	.....	.....
1½ miles northeast of, sec. 35, T. 8 S., R. 1 E., No. 8 mine, No. 6 bed (500 feet north and 2,900 feet west of shaft, room 5 off north entry 12 on west entry, 85½-inch cut).																
5215	A	1	7.88	31.20	49.89	11.03	2.99	5.14	66.50	1.04	13.30	6,523	11,741	512	.....
		2	.....	33.87	54.16	11.97	3.25	4.50	72.19	1.13	6.96	7,081	12,746	.....	.....
		3	.....	38.48	61.52	.....	3.69	5.27	82.01	1.28	7.75	8,044	14,479	.....	.....
Bertin, No. 7 mine, No. 6 bed (2,300 feet southwest of shaft, room 17 off south entry 6, west side, 85½-inch cut).																
1731	A	1	9.37	30.69	52.57	7.37	1.25	5.27	82.01	1.28	7.75	8,044	14,479	290	512	
		2	.....	33.86	58.01	8.13	1.38	4.63	73.53	1.44	8.48	6,990	12,658	13	.....
		3	.....	36.86	63.14	.....	1.50	5.07	82.14	1.83	9.47	7,392	13,306	23	.....
Same (2,400 feet northeast of shaft, room 14 off north entry 5, east side, 8-foot 9½-inch cut).																
1732	A	1	8.59	31.07	53.37	6.97	1.78	5.25	85.30	1.85	9.00	8,046	14,483	290	512	
		2	.....	33.99	58.38	7.63	1.95	5.18	67.33	1.50	15.25	6,644	11,959	13	.....
		3	.....	36.80	63.20	.....	2.11	4.63	73.53	1.44	8.48	7,256	13,061	23	.....
Same (lump and egg, over 3-inch mesh).....																
1820	C	1	8.43	30.08	51.89	9.60	1.14	4.63	73.53	1.64	8.48	7,256	13,061	290	512	
		2	.....	32.85	56.67	10.48	1.24	5.07	82.14	1.83	9.47	8,166	14,591	.....	.....
		3	.....	36.70	63.30	.....	1.39	5.25	85.30	1.85	9.00	6,778	12,788	.....	.....
Same (2,400 feet west of shaft, 7-foot cut).....																
3629	A	4	8.72	30.38	53.28	7.62	1.00	5.18	67.33	1.50	15.25	6,778	12,788	332	512	
		1	.....	33.28	58.37	8.35	1.10	5.18	67.33	1.50	15.25	7,425	13,365	.....	.....
		2	.....	36.31	63.69	.....	1.20	5.18	67.33	1.50	15.25	8,102	14,584	.....	.....

1½ miles northeast of, sec. 35, T. 8 S., R. 1 E., No. 8 mine, No. 6 bed (300 feet north and 2,900 feet west of shaft, room 5 off north entry 12 on west entry, 8½-inch cut).

Same (2,200 feet north and 2,200 feet west of shaft, room 13 off west entry 2 off north entry 4, 9½-inch cut).

Herrin, No. 7 mine, No. 6 bed (2,300 feet southwest of shaft, room 17 off south entry 6, west side, 8½-inch cut).

Same (2,400 feet northeast of shaft, room 14 off north entry 5, east side, 8-foot 9½-inch cut).

Same (lump and eggs, over 3-inch mesh).....

Same (2,400 feet west of shaft, 7-foot cut).....

Table of chemical analyses—Continued.

Locality, bed, etc.		Sample.		Proximate.					Ultimate.				Calorific value.		Reference.			
		Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.		Calo- ries.	British thermal units.	
INDIANA—Continued.																		
GREENE COUNTY—continued.																		
Linton—Continued.																		
4 miles west of; White Rabbit mine, No. 5 bed (650 feet west of shaft, 79½-inch cut).		3475	A	1 2 3	10.91 42.50 47.40	37.86 42.50 47.16	42.02 47.16 52.60	9.21 10.34 3.96	3.16 3.55 3.96					6.0		332 13 23	516	
Same (500 feet southeast of shaft, 83½-inch cut).		3476	A	1 2 3	11.51 41.57 47.61	36.78 41.57 45.75	40.49 45.75 52.39	11.22 12.68 4.71	4.17 4.71 5.39					8.6		332	516	
Same (run of mine).....		3564	C	1 2 3 4	10.30 40.48 46.58	36.31 40.48 46.58	41.64 46.42 53.42	11.75 13.10 5.43	4.23 4.72 5.43	5.38 4.73 5.75	61.00 68.00 82.75	1.06 1.18 1.36 1.44	16.58 8.27 9.51 10.06	5.9	6.233 6.949 7.995 8.325	11,218 12,508 14,391 14,985	332 13 13	.....
KNOX COUNTY.																		
Bicknell, Linn mine, No. 6 bed (500 feet northeast of shaft, 60½-inch cut).		3516	A	1 2 3	10.60 42.57 46.92	38.06 42.57 46.92	43.04 48.15 53.08	8.30 9.28 4.55	3.69 4.13 4.55					6.1	6,529 7,303 8,051	11,752 13,145 14,492	332 336 23	517
Same (250 feet northwest of shaft, 71-inch cut).		3517	A	1 2 3	11.87 41.11 45.25	36.23 41.11 45.25	43.84 49.74 54.75	8.06 9.15 5.06	4.05 4.60 5.06					6.9			332 336 23	517
Same (run of mine).....		3981	C	1 2 3 4	12.08 32.48 36.94 42.24	32.48 36.94 42.24	44.42 50.53 57.76	11.02 12.53 57.76	3.65 4.15 4.75	5.34 4.55 5.46	60.45 68.76 82.53	.89 1.01 1.16 1.21	18.65 9.00 10.28 10.80	5.1	6,117 6,957 7,955 8,238	11,011 12,523 14,319 14,828	332 336 23	.....
PARKE COUNTY.																		
Diamond, ¾ mile northwest of; No. 9 mine, Brazil Block upper bed (1,200 feet southwest of shaft, 56½-inch cut).		3534	A	1 2 3	13.70 41.64 44.70	35.94 41.64 44.70	44.45 51.51 55.30	5.91 6.85 5.07	2.66 3.08 1.93					6.7	6,628 7,680 8,245	11,930 13,824 14,841	332 23 332	517
Same (500 feet east of shaft, 48½-inch cut).....		3535	A	1 2 3	13.93 40.87 43.43	35.18 40.87 43.43	45.82 53.24 56.57	5.07 5.89 9.62	1.93 2.24 4.41					8.9			23 23	517
Rosedale, Rosedale mine, No. 3 bed (3,000 feet south- east of shaft, south entry 16; 61½-inch cut).		1853	A	1 2 3	11.54 41.64 50.09	39.49 41.64 50.09	39.35 44.48 49.91	9.62 10.88 49.91	4.41 4.99 5.60					8.6	6,475 7,320 8,213	11,655 13,176 14,783	290 336 23	518

1854	A	Same (3,000 feet northeast of shaft, north entry 18, 60½-inch cut).	12.26	38.62	40.80	8.32	4.71	9.6	515
1979	C	Same (lump, over 1½-inch bar screen).	10.72	39.29	41.42	8.57	3.83	8.1	290
			44.01	46.39	9.60	4.29	5.79	8.48	290
			46.68	51.32		4.75	6.07	9.83	290
									</

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.						Ultimate.				Calorific value.		Reference.			
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile car- mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.	British thermal units.	Bul- letin No.	Page of this bulle- tin.	
INDIANA—Continued.																		
SULLIVAN COUNTY.																		
Dugger, No. 4 mine, No. 4 bed (500 feet northeast of shaft, room 8, east entry 1, 4 foot 11½ inch cut).	1883	A	1	14.23	33.04	47.01	5.72	0.89							6,512	11,722	290	521
			2		38.52	54.81	6.67	1.04								7,592	13,666	13
			3		41.27	58.73		1.11								8,135	14,643	23
Same (600 feet northwest of shaft, room 1, west entry 1, 5 foot 1 inch cut).	1884	A	1	12.62	34.92	45.48	6.98	2.35									290	521
			2		39.96	52.05	7.99	2.69										13
			3		43.43	56.57		2.92										23
Same (lump, over 1½-inch and 3-inch screens)..	2087	C	1	12.15	33.48	46.23	8.14	1.41	5.46	64.92	1.38	18.69	4.0	6,534	11,761	290		
			2		38.11	52.62	9.27	1.61	4.08	73.90	1.57	8.97		7,438	13,388			
			3		42.00	58.00		1.77	5.16	81.44	1.73	9.90		8,197	14,755			
			4		35.17	43.73	8.96	3.54	5.25	82.89	1.76	10.10		8,302	14,944			
Hymers, No. 33 mine, No. 5 bed (1,600 feet southwest of shaft, room 16, off east entry 2, 62-inch cut).	1773	A	1	12.14	40.03	49.77	10.20	4.03								290	522	
			2		44.58	55.42		4.49									336	
			3		35.53	43.14	9.16	4.66								8,108	14,594	13
Same (1,200 feet northeast of shaft, east entry 2, north side, 83-inch cut).	1774	A	1	12.17	35.53	43.14	9.16	4.66								290	522	
			2		40.45	49.12	10.43	5.31									336	
			3		45.16	54.84		5.93									23	
Same (run of mine).....	1859	C	1	12.03	35.65	41.44	10.88	4.27	5.50	60.73	1.08	17.54	7.2	6,218	11,192	290		
			2		40.53	47.10	12.37	4.85	4.73	69.04	1.23	7.78		7,069	12,724			
			3		46.25	53.75		5.54	5.40	78.78	1.40	8.88		8,066	14,519			
			4		38.62	41.35	9.58	4.04	5.70	83.40	1.48	9.42		8,407	15,132			
Near, No. 34 mine, No. 5 bed (300 feet southeast of shaft, shaft, room 2, off east entry 2, south side, 63½-inch cut).	1772	A	1	10.45	38.62	41.35	9.58	4.04								290	522	
			2		43.13	46.17	10.70	4.51									332	
			3		48.30	51.70		5.05									13	
Same (425 feet north of shaft, main north entry, foot cut).	1776	A	1	9.22	37.76	41.85	11.17	3.94								290	522	
			2		41.60	46.10	12.30	4.34									332	
			3		47.44	52.56		4.95									23	
Same (run of mine).....	1875	C	1	10.80	36.09	40.49	12.62	4.39	5.46	60.88	1.13	15.52	5.2	6,214	11,185	290		
			2		40.46	45.39	14.15	4.92	4.78	68.25	1.27	6.63		6,967	12,541			
			3		47.13	52.87		5.73	5.56	79.50	1.48	7.73		8,114	14,605			
			4		35.81	41.78	9.16	1.87	5.90	84.32	1.57	8.21		8,469	15,244			
Mildred, Mildred mine, No. 6 bed (room 5, off south-east entry, 58½-inch cut).	1410	A	1	13.25	41.28	48.16	10.56	2.16								13	523	
			2		46.16	53.84		2.42									332	
			3		35.02	43.86	9.62	.96								48		
Same (room 4, off southwest entry, 61½-inch cut)..	1412	A	1	11.50	35.02	43.86	9.62	.96								23	523	
			2		46.16	53.84		2.42									48	

Mildred, Mildred mine, No. 6 bed (room 5, off south-east entry, 58½-inch cut).
Same (room 4, off southwest entry, 91½-inch cut).

Table of chemical analyses—Continued.

Sample.		Proximate.					Ultimate.				Calorific value.		Reference.			
Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile car- mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.	British thermal units.	Bul- letin No.	Page of this bulle- tin.
IOWA—Continued.																
MONROE COUNTY.																
Avery, Smoky Hollow No. 6 mine, Third seam.....																
1288	B	1	12.03	40.62	37.97	9.38	5.04	.....	.....	.....	.....	6.6	6,030	10,854	48	531
		2	.....	46.18	43.16	10.66	5.73	.....	.....	.....	.....	.....	.....	.....	.....	.....
		3	.....	51.69	48.31	.....	6.41	.....	.....	.....	.....	.....	.....	.....	.....	.....
Same.....																
1290	B	1	15.84	36.90	37.88	9.38	4.68	.....	.....	.....	.....	10.4	7,165	12,897	48	531
		2	.....	43.84	45.01	11.15	5.56	.....	.....	.....	.....	.....	8,064	14,513	.....	.....
		3	.....	49.33	50.67	.....	6.26	.....	.....	.....	.....	.....	.....	.....	.....	.....
POLK COUNTY.																
Altoona, near: No. 4 mine, Third seam (main west entry, 55-inch cut),																
1312	A	1	14.42	37.81	36.78	10.99	5.89	.....	.....	.....	.....	9.6	5,911	10,640	261	532
		2	.....	44.18	42.98	12.84	6.88	.....	.....	.....	.....	.....	6,907	12,433	48	.....
		3	.....	50.69	49.31	7.89	7.89	.....	.....	.....	.....	.....	7,925	14,265	.....	.....
Same (north entry 9, 46-inch cut).....																
1313	A	1	15.90	37.42	34.31	12.37	6.76	.....	.....	.....	.....	11.0	.....	.....	48	532
		2	.....	44.50	40.79	14.71	8.04	.....	.....	.....	.....	.....	.....	.....	.....	.....
		3	.....	52.17	47.83	.....	9.43	.....	.....	.....	.....	.....	.....	.....	.....	.....
Same (lump, 12 tons).....																
1434	C	1	13.88	36.94	35.17	14.01	6.15	5.52	54.68	84	18.80	9.8	5,691	10,244	261	.....
		2	.....	42.89	40.84	16.27	7.14	4.62	63.49	98	7.50	.....	6,698	11,894	48	.....
		3	.....	51.22	48.78	.....	8.53	5.52	75.83	116	8.96	.....	7,892	14,206	.....	.....
		4	.....	.....	.....	.....	.....	6.04	82.89	1.27	9.80	.....	8,418	15,152	.....	.....
WAPELLO COUNTY.																
Laddsdale, near: Anchor No. 2 mine (Third bed, 27- inch cut).																
1270	A	1	11.35	38.65	39.49	10.51	4.72	.....	.....	.....	.....	7.9	6,303	11,345	261	532
		2	.....	43.60	44.54	11.86	5.32	.....	.....	.....	.....	.....	7,110	12,798	48	.....
		3	.....	49.47	50.53	.....	6.04	.....	.....	.....	.....	.....	8,066	14,519	261	532
Same (Middle bed, 35-inch cut).....																
1271	A	1	12.07	37.28	38.32	12.33	4.99	.....	.....	.....	.....	8.0	.....	.....	48	.....
		2	.....	42.46	43.58	14.02	5.68	.....	.....	.....	.....	.....	.....	.....	.....	.....
		3	.....	49.32	50.68	.....	6.61	.....	.....	.....	.....	.....	.....	.....	.....	.....
Same (Middle bed, run of mine).....																
1347	C	1	8.24	36.74	45.02	16.00	5.03	4.81	59.82	94	13.40	3.2	6,126	11,627	261	.....
		2	.....	33.50	49.06	17.44	5.48	4.24	65.19	1.02	6.63	.....	6,676	12,017	48	.....
		3	.....	40.58	59.42	.....	6.64	5.13	78.96	1.24	8.03	.....	8,086	14,555	.....	.....
		4	.....	.....	.....	.....	.....	5.50	84.56	1.33	8.61	.....	8,502	15,304	.....	.....

KANSAS.															
ATCHISON COUNTY.															
Atchison, $\frac{1}{2}$ mile below; Atchison mine, Cherokee bed, run of mine lump, 10 tons.	1473	C	1 2 3 4	6.05 38.37 44.15	35.70 45.16 48.53	12.19 13.10	8.04 8.64 9.94	5.25 4.81 6.15	62.74 67.43 77.59 86.17	1.04 1.12 1.29 1.43	10.74 4.90 5.64 6.25	3.5	6,614 7,103 8,180 8,894	11,905 12,764 14,724 15,902	261 48
CHEROKEE COUNTY.															
Scammon, $\frac{1}{2}$ mile west of Frisco depot; No. 9 mine lower Weir-Pittsburg bed (600 feet south of shaft, 4-foot cut).	1036	A	1 2 3	2.01 36.73 43.45	46.85 47.81 56.55	15.15 15.46	5.27 5.38								532
Same (500 feet north of shaft, 4-foot cut).	1037	A	1 2 3	2.54 35.31 44.15	52.28 53.64 59.09	9.87 10.13	4.47 4.59						7,411 7,604 8,461	13,340 13,687 15,230	533
Same (run of mine, 7 tons).	1086	C	1 2 3 4	2.50 34.67 39.75	51.25 52.50 60.25	12.45 12.77 16.05	5.68 5.83 6.68	4.91 4.75 5.44 5.83	69.07 70.84 81.21 87.02	1.20 1.23 1.41 1.51	6.69 4.58 5.26 5.64		7,166 7,349 8,426 8,868	12,900 13,228 15,167 15,962	
West Mineral, No. 11 mine, lower Weir-Pittsburg bed (900 feet from shaft, main east entry, $4\frac{1}{2}$ -inch cut).	1411	A	1 2 3	5.11 32.60 37.92	53.39 56.26 62.08	8.90 9.38	4.34 4.57						7,181 7,568 8,351	12,926 13,622 15,032	533
Same (540 feet from shaft, main west entry, $4\frac{1}{2}$ -inch cut).	1413	A	1 2 3	5.79 34.33 39.61	49.32 52.35 60.39	12.55 13.32	3.84 4.08					4.3	7,568 8,351	13,622 15,032	533
Same (lump and nut, over $\frac{1}{2}$ -inch screen, first portion, 7 tons).	1567	C	1 2 3 4	4.10 31.65 37.08	53.71 56.01 62.92	10.54 10.99	3.77 3.93	5.10 4.84 5.44	70.25 73.26 82.30 86.11	1.06 1.11 1.24 1.30	9.28 5.87 6.60 6.90	2.3	7,164 7,471 8,393 8,676	12,895 13,448 15,107 15,617	
Same (second portion, 30 tons).	1605	C	1 2 3	4.60 33.48 37.99	52.15 54.66 62.01	11.31 11.86	3.40 3.56 4.04					3.7			
CRAWFORD COUNTY.															
Fleming, No. 10 mine, lower Weir-Pittsburg bed (sample 1, $\frac{1}{2}$ $4\frac{1}{2}$ -inch cut).	1018	A	1 2 3	2.91 36.88 40.90	51.73 53.28 59.10	9.55 9.84	3.79 4.33						7,193 7,409 8,217	12,947 13,336 14,791	533
Same (sample 2, $\frac{1}{2}$ 39-inch cut).	1020	A	1 2 3	3.50 35.75 37.05	52.83 54.74 59.64	7.92 8.21	3.28 3.40								533
Same (run of mine, 22 tons).	1097	C	1 2 3 4	4.99 34.40 39.84	49.36 51.95 60.16	12.97 13.65	4.28 4.50 5.22	4.98 5.40 5.70	67.34 70.88 82.08 86.60	1.08 1.14 1.32 1.39	9.35 5.17 5.98 6.31	1.3	6,801 7,158 8,290 8,622	12,342 12,884 14,922 15,520	
Frontenac, 3 miles north of; sec. 29, T. 29 S., R. 25 W.; No. 11 mine, Cherokee or Weir-Pittsburg bed (3,000 feet south of opening, south entry 1 of	661b	A	1 2 3	6.09 34.93 39.42	50.43 53.09 60.58	10.68 11.38	5.74 6.11 6.89					4.1			534

a Samples 1 and 2 from widely separated parts of same mine.

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.					Calorific value.		Reference.	
	Lab-ora-tory No.	Kind.	Con-dition.	Mois-ture.	Vola-tile mat-ter.	Fixed car-bon.	Ash.	Sul-phur.	Hy-dro-gen.	Car-bon.	Nitro-gen.	Oxy-gen.	Air-dry-ing loss.	Calo-ries.		British thermal units.
KANSAS—Continued.																
CRAWFORD COUNTY—continued.																
Frontenac, No. 11 mine—Continued.																
Same (4,000 feet west of opening, main west entry, 3½-inch cut).	660b	A	1	5.28	33.95	51.61	9.16	3.99					3.3	7,229	13,012	5 534
			2		35.85	54.48	9.67	4.21						7,632	13,738	
			3		39.69	60.31		4.66						8,449	15,208	
Same (run of mine).	701b	C	1	5.75	33.28	47.29	13.68	5.07	5.01	66.68	1.15	8.41	2.8	6,721	12,098	5
			2		35.28	50.21	14.51	5.38	4.64	70.52	1.22	3.50		7,132	12,838	
			3		41.27	58.73		5.01	5.43	82.75	1.43	4.10		8,332	14,988	
Yale, No. 11 mine, lower Weir-Pittsburg 3-foot bed (sample 1, α 36½-inch cut).	1017	A	1	2.44	35.16	51.80	10.60	6.29	4.64					5,332	13,043	261
			2		36.04	53.09	10.87	5.77						7,246	13,369	48
			3		40.44	59.56		6.47						7,427	13,569	23
Same (sample 2, α 3-foot cut).	1019	A	1	2.36	34.62	51.23	11.79	5.88						8,333	14,999	261
			2		35.46	52.46	12.08	6.02								48
			3		40.33	59.67		6.85	4.69	61.88	.92	8.33	2.0	6,468	11,642	23
Same (lump and nut, two-thirds of carload).	1122	C	1	4.18	31.23	46.68	17.91	6.27	4.41	64.58	.96	4.82		6,750	12,150	48
			2		32.59	48.72	18.69	6.54	2.43	70.42	1.18	5.92		8,302	14,944	
			3		40.08	59.92		8.05	5.90	86.39	1.28	6.43		8,832	15,898	
Same (slack, uninspected).	4301	C	1	8.01	26.39	45.22	20.38	4.70	4.71	38.52	1.04	10.65	6.6	5,911	10,640	332
			2		28.69	49.15	22.16	5.11	4.15	63.62	1.13	3.83		6,426	11,567	
			3		36.85	63.15		6.56	5.33	81.72	1.45	4.94		8,234	14,857	
			4						5.71	87.46	1.55	5.28		8,676	15,617	
LINN COUNTY.																
Jewett, No. 1 mine, Weir-Pittsburg bed (2,000 feet northeast of shaft, east entry 6, 32-inch cut).	2790	A	1	11.13	28.83	47.44	12.60	2.41					9.2	6,233	11,219	332
			2		32.44	53.38	14.18	2.71						7,013	12,623	13
			3		37.80	62.20		3.16						8,172	14,710	23
Same (1,200 feet northwest of shaft, west entry 3, 26½-inch cut).	2791	A	1	10.12	30.25	46.82	12.81	2.66					7.6			332
			2		33.66	52.09	14.25	2.96								13
			3		39.25	60.75		3.45								23
Same (lump, over 1½-inch bar screen).	2843	C	1	9.04	29.69	45.55	15.72	3.72	5.01	60.99	1.06	13.50	7.1	6,190	11,142	332
			2		32.64	50.08	17.28	4.09	4.41	67.05	1.17	6.00		6,805	12,249	
			3		39.45	60.55		4.93	5.33	81.06	1.41	7.27		8,227	14,809	
			4						5.61	85.28	1.48	7.63		8,537	15,367	

KENTUCKY.															
BELL COUNTY.															
Straight Creek, Straight Creek No. 2 mine, 8 rail Creek bed (main entry, 37-inch cut).	1321	A	1	2	1	2	1	2	1	2	1	2	1	13	536
			2	3	3	3	3	3	3	3	3	3	3	23	536
	1322	A	2	3	2	3	2	3	2	3	2	3	2	13	536
			3	3	3	3	3	3	3	3	3	3	3	23	536
Same (room 76, off main entry, 38½-inch cut)....			3	3	3	3	3	3	3	3	3	3	3	23	536
Same (3,000 feet northeast of drift mouth, room 99, off main entry, 40½-inch cut).	2350	A	1	2	1	2	1	2	1	2	1	2	1	200	536
Same (3,600 feet from drift mouth, room 48, off north butt entry 4, 33-foot cut).	2351	A	1	2	1	2	1	2	1	2	1	2	1	290	536
Same (run of mine, first portion, 23 tons).....	1474	C	1	2	1	2	1	2	1	2	1	2	1	201	537
Same (run of mine, second portion, 12 tons)....	1522	C	1	2	1	2	1	2	1	2	1	2	1	201	537
Same (screenings, slack through 1½-inch screen).	2445	C	1	2	1	2	1	2	1	2	1	2	1	200	537
HARLAN COUNTY.															
Big Black Mountain, prospect pit, 11½ Splint bed (1 mile south of Gilliam's rock house, 73½-inch cut).	2271	A	1	2	1	2	1	2	1	2	1	2	1	200	537
Same (Gilliam's rock house, 25 feet from out- crop, 58½-inch cut).	2272	A	1	2	1	2	1	2	1	2	1	2	1	200	537
Same (weathered sample).....	2270	A	1	2	1	2	1	2	1	2	1	2	1	200	537
Same (run of mine).....	2528	C	1	2	1	2	1	2	1	2	1	2	1	200	537
Poor Fork, near; mine on the Anthony Blair tract....	4525	B	1	2	1	2	1	2	1	2	1	2	1	200	538
Mine on the C. Blair tract.....	4527	B	1	2	1	2	1	2	1	2	1	2	1	200	538
Mine on the John Creek tract	4528	B	1	2	1	2	1	2	1	2	1	2	1	200	538

a Samples 1 and 2 from widely separated parts of same mine.

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.						Ultimate.				Calorific value.		Reference.		
	Lab- ora- tory No.	Kind. Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries. British thermal units.	Bul- letin No.	Page of this bulle- tin.		
KENTUCKY—Continued. HARLAN COUNTY—continued. Poor Fork—Continued. Mine on the Rebecca Creek tract	4526	B	1	4.94	33.56	58.01	3.49	0.61	.....	.....	.....	3.2	.....	.....	538
			2	.....	33.31	61.02	3.67	.04	.....	.....	.....	.....	.....	.....	.....
			3	36.65	63.3506	
HOPKINS COUNTY. Barnsley, Barnsley mine, No. 9 bed (west entry 3, 52-inch cut).	1361	A	1	9.10	36.21	46.64	8.05	2.97	.....	.....	.....	3.3	.....	13	538
			2	39.83	51.31	8.86	3.27	23	
			3	43.70	56.30	3.59	48
Same (break-through between north entries 3 and 4, 44-foot cut).	1367	A	1	7.98	37.55	46.17	9.30	4.03	.....	.....	.....	2.2	6,647	13	538
			2	40.81	49.08	10.11	4.38	23	
			3	45.40	54.60	4.87	48
Same (over 7-inch screen, 17 tons).....	1505	C	1	7.84	37.01	47.23	7.92	2.94	.....	.....	.....	1.6	8,037	48	.....	
			2	40.16	51.25	8.59	3.19	
			3	43.94	56.06	3.49
Same (run of mine, 12 tons).....	1506	C	1	7.92	36.09	46.93	10.06	3.52	5.39	65.29	1.40	2.2	6,679	201	.....	
			2	.....	39.19	49.88	10.93	3.82	4.90	70.90	1.52	7.93	7,253	48	.....	
			3	44.00	56.00	4.29	5.50	79.60	1.71	8.90	8,143	
Earlington, No. 11 mine, No. 11 bed (room 10 off west entry 3, 84-inch cut).	1365	A	4	8.49	38.05	46.36	7.10	3.53	5.74	83.17	1.78	2.9	8,406	23	539		
			1	41.58	56.66	7.76	3.86	48
			2	45.08	54.92	4.18
Same (room 15 off west entry 4, 62-inch cut)...	1366	A	1	7.80	37.00	44.38	10.22	4.20	.....	.....	.....	.....	.....	.....	539
			2	40.78	48.14	11.08	4.56	48
			3	45.86	54.14	5.13
Same (over 7-inch screen, 20 tons).....	1461	C	1	7.91	37.94	46.02	9.13	3.62	5.48	65.81	1.22	2.7	6,778	201	.....	
			2	.....	41.20	48.89	9.91	3.93	5.00	71.46	1.32	8.38	7,360	48	.....	
			3	45.73	54.27	4.36	5.54	79.33	1.47	9.30	8,170	
Same (through 7-inch screen, 5 tons).....	1469	C	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
			1	9.47	33.24	39.51	17.68	4.47	
			2	36.83	43.64	10.53	4.94
.....	.....	.....	3	.....	45.77	54.23	.....	6.14	.....	.....	.....	.....	.....	.....	.....

JOHNSON COUNTY.

Flambeau, southeast of; 400 yards up mountain side, Flambeau mine, Carnel bed, ^a on chain pillar (150 feet southeast of opening, main entry 1, 18-inch cut). Same (230 feet southeast of opening, entry 5, 3½-inch cut).	7133	A	1 2 3	2.36	48.40 49.57 55.53	38.75 39.09 44.47	10.40 10.74	1.20 1.33 1.38	6.47 6.36 7.13	71.98 73.72 82.59	1.16 1.19 1.33	8.70 8.70 7.57	1.5	7,650 7,835 8,778	13,770 14,103 15,800	540
Lesley (East Point post office), Lesley mine, Lesley bed, cannel coal.	7132	A	1 2 3	2.20	50.64 51.78 57.08	36.70 37.52 42.02	10.46 10.70.....	.89 1.01 1.13	6.57 7.25 7.93	72.01 73.03 82.45	1.17 1.20 1.34	8.80 8.99 7.83	1.3	7,638 7,810 8,746	13,748 14,058 15,733	540
Paintsville, 5 miles southeast of; Miller Creek, country bank, Miller Creek bed (100 feet west of drift mouth, right entry 1, 3½-foot cut). Same (140 feet west of drift mouth, main entry, 3½-foot cut).	2405 2406	A	2 3 4	6.35	57.04 57.04 57.04	42.36 42.36 42.36	2.03 2.18.....	.45 1.13 1.04	7.45 7.45 7.45	82.31 82.31 82.31	1.47 1.33 1.33	7.61 8.89 8.89	4.5	8,806 8,806 8,806	16,013 16,013 16,013	540
Same (run of mine).	2592	C	1 2 3	5.12	38.49 38.49 38.49	60.17 60.17 60.17	2.18 2.18 2.18	.53 1.13 1.13	6.57 7.25 7.93	72.01 73.03 82.45	1.17 1.20 1.34	8.80 8.99 7.83	4.2	8,172 8,172 8,172	14,710 14,710 14,710	280 13 23
Van Lear, Mine No. 1, No. 1 bed (face of No. 1 right heading, No. 1 opening, 53½-inch cut).	10548	A	1 2 3	7.17	35.18 37.90 38.94	55.17 59.43 61.06	2.48 2.67.....	.60 1.54 1.55	5.47 5.16 5.32	77.20 81.37 83.80	1.45 1.53 1.57	12.55 8.43 8.69	2.2	7,635 8,047 8,288	13,743 14,485 14,918	541
Same (face of second left, off west opening of No. 1 mine, 53½-inch cut).	10549	A	1 2 3	5.61	36.44 38.60 40.35	53.85 57.06 59.65	4.10 4.34	1.70 1.80 1.88	5.16 5.35 5.69	83.80 84.32 84.91	1.57 1.58 1.47	8.69 8.75 13.52	3.0 4.4 3.7	8,325 8,325 7,475	14,985 14,985 13,435	541
Same (composite of Nos. 10548 and 10549).	10550	A	1 2 3	6.43	36.20 38.69 40.08	54.13 57.85 59.92	3.24 3.46	1.17 1.25 1.29	5.69 5.32 5.51	74.91 80.06 82.93	1.47 1.57 1.63	13.52 8.34 8.64	3.7	7,475 7,989 8,275	13,435 14,380 14,895	541
No. 2 mine (face of first right, 36-inch cut).	10551	A	1 2 3	6.32	36.30 38.76 40.19	54.07 57.70 59.81	3.31 3.54	1.79 1.90 1.97	5.73 5.87 6.07	74.94 80.00 82.94	1.46 1.56 1.62	12.77 7.03 7.00	3.5	7,468 7,962 8,254	13,424 14,332 14,857	541
No. 3 mine (face of main entry, 39-inch cut).	10552	A	1 2 3	6.60	35.27 37.77 39.14	54.87 58.74 60.86	3.26 3.49	1.44 1.54 1.60	5.72 5.84 6.03	74.79 80.09 82.99	1.35 1.45 1.50	13.44 8.09 8.38	4.1	7,427 7,953 8,241	13,369 14,315 14,834	541
No. 4 mine (face of main entry, 44-inch cut).	10553	A	1 2 3	6.90	34.93 37.52 38.47	55.88 60.02 61.53	2.29 2.46.....	.68 1.03 1.03	5.80 6.40 6.54	76.07 81.71 83.77	1.47 1.58 1.62	13.74 8.17 8.37	4.1	7,484 8,039 8,242	13,471 14,470 14,836	541
Jewel, 3 miles southwest of; Potter bank, on Bens branch of Elkhorn Creek, Upper Elkhorn bed, 96-inch cut.	3828	B	1 2 3	3.96	32.37 33.70 34.63	61.10 63.62 65.37	2.57 2.68.....	.56 1.69 1.69	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	1.9 ..... .....	..... ..... .....	..... ..... .....	316 348

^a About 300 feet above Miller Creek (No. 1) bed.

LETCHER COUNTY.

Locality	No.	Sample	3	34.31	65.09	58	316	348	544
from entrance, excluding laminated coal, 32-inch cut.	3702	B	1	3.19	25.83	48.61	22.37	40	544
Same (laminated coal only, 22-inch upper bench, composite sample).			2	.....	26.68	50.21	23.11	41	544
Same (whole bed, 54-inch cut).	3705	B	3	.....	34.70	65.30	.....	53	544
			1	2.90	28.59	53.70	14.81	49	544
			2	.....	29.44	55.31	15.25	50	544
			3	.....	34.74	65.26	.....	59	544
Same (500 feet south and 600 feet west of opening, 75 feet from outcrop, right heading 1, 48-inch cut).	6928	A	1	3.73	30.01	59.42	6.84	56	544
Same (1,600 feet south of opening, main heading, right parallel entry 4, 43½-inch cut).	6929	A	3	.....	33.55	66.45	7.10	58	544
			2	3.41	32.08	58.78	5.73	62	544
			3	.....	33.21	60.86	5.93	53	544
2½ miles west of: at head of Cassell Fork, Musgrove prospect pit, Flatwoods bed, 43-foot cut from top bench.	3829	B	1	3.45	33.69	64.70	8.25	58	545
Regina, near: at Coleman Hollow, Coleman mine, Millard 52-inch bed.	3662	B	2	.....	34.89	56.57	8.54	85	545
			3	.....	38.15	61.85	.....	93	545
2 miles east of: Martin bank on right-hand branch of Road Creek, Lower Elkhorn, excluding laminated coal, bed, 49-inch cut, 40 feet from entry.	3663	B	1	3.00	32.22	56.59	8.19	106	546
			2	.....	36.28	63.72	8.44	109	546
			3	.....	33.19	64.63	.....	119	546
4 miles south of: Pond Creek, just below mouth of Laurel Branch, Moore bank, 30 feet from entrance, Lower Elkhorn (whole) bed, 52-inch cut.	3661	B	1	4.73	31.62	61.57	2.08	71	546
			2	.....	33.93	66.07	.....	75	546
			3	.....	.....	.....	.....	77	546
			1	5.27	27.74	59.75	7.24	50	547
			2	.....	29.28	63.08	7.64	53	547
			3	.....	31.70	68.30	.....	57	547
UNION COUNTY.									
Sturgis, 2½ miles southwest of: Bell slope, No. 1 bed (100 feet north of opening, 51½-inch cut).	3678	A	1	7.46	30.69	57.25	4.60	97	547
Same (60 feet north of opening, 33½-inch cut).	3679	A	2	.....	33.16	61.57	4.97	105	547
			3	.....	34.89	65.11	.....	110	547
			1	8.09	30.10	56.65	5.16	107	547
			2	.....	32.75	61.64	5.61	116	547
			3	.....	34.70	65.30	.....	123	547
Same (run of mine).	3860	C	1	5.46	30.99	55.63	7.82	118	547
			2	.....	32.78	58.84	8.38	125	547
			3	.....	35.78	64.22	.....	136	547
			4	.....	.....	.....	.....	.....	547
WEBSTER COUNTY.									
Wheatcroft, Wheatcroft mine, No. 11 bed (room 8 off west shaft entry, 70-inch cut).	1382	A	1	4.61	38.17	49.82	7.40	333	548
Same (west entry 2, 65-inch cut).	1384	A	2	.....	40.01	52.23	7.76	349	548
			3	.....	43.37	56.63	.....	378	548
			1	4.76	39.72	48.51	7.01	321	548
			2	.....	41.71	50.93	7.36	337	548
			3	.....	45.02	54.98	.....	364	548
Same (run of mine).	1539	C	1	5.27	35.07	45.43	14.18	454	548
			2	.....	37.02	48.01	14.97	479	548
			3	.....	43.54	56.46	.....	564	548
			4	.....	.....	.....	.....	.....	548

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.		Reference.			
	Laboratory No.	Kind.	Con- dition.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.	British thermal units.	Bul- letin No.	Page of this bulle- tin.
KENTUCKY—Continued.																	
WEBSTER COUNTY—continued.																	
Wheatcroft—Continued.																	
1½ miles east of; No. 5 mine, 500 feet from mouth, room 3, south heading 1 off east entry, Owen (No. 11) bed, 59½ inches.	7441	A	1	6.29	31.97	54.13	7.61	1.35	5.49	69.78	1.37	14.40	4.5	7,152	12,874	6	548
			2	.....	34.11	57.77	8.12	1.44	5.11	74.46	1.46	9.41	.....	7,632	13,738		
			3	.....	37.13	62.87	.....	1.57	5.56	81.04	1.59	10.24	.....	8,307	14,953		
WHITLEY COUNTY.																	
Barthell, No. 1 mine, room 14, left entry 6, No. 2 bed, 48-inch bed.	10062	A	1	2.86	40.15	47.47	9.52	3.07	5.42	71.13	1.11	9.75	1.4	7,215	12,987	.....	549
			2	.....	41.33	48.87	9.80	3.16	5.25	73.22	1.14	7.43	.....	7,427	13,369		
			3	.....	45.82	54.18	.....	3.50	5.82	81.17	1.26	8.25	.....	8,234	14,821		
Kearsee, Main Jellico mines (new mine), Jellico bed	1329	A	1	5.02	36.08	54.47	4.43	.92	.....	.....	.....	.....	2.6	7,590	13,698	.....	549
			2	.....	37.99	57.35	4.66	.87	.....	.....	.....	.....	.....	7,960	14,328		
			3	.....	39.85	60.15	.....	1.02	.....	.....	.....	.....	.....	8,349	15,028		
Same (old mine).....	1330	A	1	5.51	35.24	56.70	2.55	.90	.....	.....	.....	.....	2.4	.....	.....	.....	549
			2	.....	37.29	60.01	2.70	.95	.....	.....	.....	.....	.....	.....	.....	.....
			3	.....	38.32	61.68	.....	.98	.....	.....	.....	.....	.....	.....	.....	.....
MARYLAND.																	
ALLEGANY COUNTY.																	
Eckhart, Ocean No. 3½ mine, Big Vein bed (first cross-cut on motor road No. 2, 8 feet 5½ inches).	8769	A	1	2.3	14.5	75.0	8.2	1.10	.....	.....	.....	.....	1.5	7,790	14,020	.....	550
			2	.....	15.0	76.6	8.4	1.10	.....	.....	.....	.....	.....	7,975	14,360		
			3	.....	16.5	83.5	.....	1.20	.....	.....	.....	.....	.....	8,705	15,670		
Same (left heading 1, 50 feet from motor road, 8½-inch cut).	8770	A	1	2.2	13.5	74.0	8.3	1.15	.....	.....	.....	.....	1.5	.....	.....	.....	550
			2	.....	16.0	75.5	8.5	1.15	.....	.....	.....	.....	.....	.....	.....	.....
			3	.....	17.5	82.5	.....	1.30	.....	.....	.....	.....	.....	.....	.....	.....
Same (left heading 1, off main heading, 38-inch cut).	8771	A	1	3.0	14.5	73.3	9.2	1.00	.....	.....	.....	.....	2.2	.....	.....	.....	550
			2	.....	15.0	75.6	9.4	1.00	.....	.....	.....	.....	.....	.....	.....	.....
			3	.....	16.5	83.5	.....	1.10	.....	.....	.....	.....	.....	.....	.....	.....
Same (composite of Nos. 8769-8771).....	8843	.....	1	2.7	14.5	74.0	8.80	1.00	4.44	79.21	1.69	4.86	1.9	7,725	13,910	.....	550
			2	.....	15.0	76.0	9.04	1.03	4.25	81.39	1.74	2.55	.....	7,940	14,290		
			3	.....	16.5	83.5	.....	1.13	4.67	89.48	1.91	2.81	.....	8,730	15,710		

Washington No. 1 mine, Pittsburgh bed (2,100 feet northwest of drift mouth, Cannon's heading, 79½-inch cut).	6358	A	1	3.64	16.07	72.09	8.20	.99	2.9	7.715	13.887	551
Same (2,000 feet southwest of drift mouth, inside place for main heading, 78-inch cut).	6359	A	2	2.85	18.23	74.81	8.51	1.03	2.0	8.007	14.413	551
Washington No. 2 mine, Upper Sewickley or Tyson bed (2,860 feet west of drift mouth, room 6, off right entry 1, off south entry 4, 47½-inch cut).	6356	A	3	2.99	16.54	73.55	7.53	1.03	2.3	7.832	13.103	551
Same (3,600 feet south of drift mouth, south heading 3, 42-inch cut).	6357	A	3	2.99	16.54	73.55	7.53	1.03	2.3	7.832	13.103	551
Same (room 3, south entry 7, off main entry, 47½-inch cut).	8863	A	3	3.4	15.73	73.76	7.52	.98	2.5	7.804	14.133	551
Same (room 2, right entry 1, off south entry 4, 40-inch cut).	8864	A	3	3.4	15.73	73.76	7.52	.98	2.5	7.804	14.133	551
Same (pillar of room 4, south entry 18, 41½-inch cut).	8865	A	3	4.3	17.57	82.43	8.69	1.02	1.6	8.787	15.817	551
Same (composite of Nos. 8863, 8864, and 8865).	8932	A	3	3.4	17.49	71.51	8.69	1.02	1.6	8.787	15.817	551
Frostburg, 1½ miles northeast of, Tyson No. 9 mine, Upper Sewickley or Tyson bed (890 feet northeast of drift mouth, room 8, right entry 1 off left entry 1, 37½-inch cut).	6363	A	3	2.79	17.21	71.50	8.50	2.05	2.1	7.748	13.946	552
Same (2,200 feet southeast of drift mouth, right blind opening 5, 39½-inch cut).	6361	A	3	3.05	17.21	71.50	8.50	2.05	2.1	7.748	13.946	552
Same (left entry 3, off right entry 1, B opening, 1,000 feet southeast of mouth of mine).	6362	A	3	2.60	18.07	71.72	7.55	1.00	2.0	7.831	14.096	552
1½ miles southwest of, Tyson (pumping shaft) mine, Upper Sewickley or Tyson bed (50 feet from shaft, new main heading, 34½-inch cut).	6354	A	3	2.95	16.92	73.00	7.13	1.32	2.4	8.785	14.126	553
2 miles south of, Ocean No. 3 (Hoffman) mine, Big vein or Pittsburgh bed (13,000 feet southwest of slope, room 2, right heading 5, 94-foot cut).	6352	A	3	2.63	16.19	73.86	7.32	.94	2.0	7.910	14.238	553
Same (room 4, left entry 3, off north, 8-foot cut).	6353	A	3	2.66	15.68	73.88	7.78	.88	2.1	8.037	14.467	553
Same (pillar in left entry 2, near room 7, 105-inch cut).	8757	A	3	2.5	14.9	75.4	8.1	1.25	1.7	8.735	15.723	554
Same (pillar of room 33, off crossheading 1, 113½-inch cut).	8758	A	3	2.4	13.5	75.8	7.3	1.35	1.6	7.910	14.238	554
Same (pillar of room 11, cross 1, off Klondike entry, 95-inch cut).	8759	A	3	2.7	14.5	75.1	7.7	1.85	1.8	8.037	14.467	554

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.		Reference.				
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mols- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.		Calo- ries.	British thermal units.		
MARYLAND—Continued.																		
ALLEGANY COUNTY—continued.																		
Lord, Tyson No. 7 mine—Continued.	8820	A	1	2.9	16.5	73.3	7.3	.95						2.2		557		
Same (right heading 1, 3½-foot cut).....			2		17.0	75.5	7.5	1.00										
			3		18.5	81.5			1.10									
Same (composite of Nos. 8818-8820).....	8930		1	3.3	16.5	73.2	7.0	.98	4.68	79.73	1.68	5.94	2.6	7.820	14,080	557		
			2		17.0	75.8	7.2	1.01	4.47	82.43	1.74	3.12	8.085	14,560				
			3		18.0	82.0		1.09	4.82	88.85	1.88	3.36	8.715	15,690			558	
Midland, Ocean No. 8 mine, Upper Sewickley or Tyson bed (1,300 feet northwest of drift, break through in main heading, 24-foot cut).	6355	A	1	3.66	16.88	71.41	8.05	1.06						3.0	8.031	14,455	558	
Same (500 feet northeast of drift, room 9, right heading 2, 32½-inch cut).			2		17.52	74.12	8.36	1.16								8.763	15,773	
			3		19.12	80.88		.92									8.031	14,455	558
Same (1,000 feet northeast of drift, room 7, right heading 4, 33½-inch cut).	6360	A	1	2.54	18.22	72.01	7.23	.94						1.9	8.142	14,283	558	
			2		18.70	73.88	7.42	1.02								8.794	15,829	
			3		20.20	79.80		1.12									8.752	13,648	558
Same Pittsburgh bed (split between rooms 19 and 20, off Cullen's heading, 9-foot cut).	8778	A	1	2.86	17.13	69.62	10.39	1.12						2.3	8.740	15,732	558	
			2		17.63	71.67	10.70	1.15								7.815	14,070	
			3		19.74	80.26		1.29									8.680	15,630	558
1 mile from: Tyson No. 8 mine, Tyson bed (room 1, left entry 7, off drift 1, 29 inches).	8833	A	1	3.1	15.5	74.5	6.9	.86	4.57	80.71	1.69	5.32	2.3	7.805	14,050	559		
			2		16.0	76.9	7.1	.89	4.36	83.31	1.74	2.63	8.065	14,520				
			3		17.0	83.0		.95	4.69	89.65	1.87	2.83	8.680	15,630				
Same (bore-hole heading off drift 2, 31½ inches).	8862	A	1	2.7	16.5	75.3	8.0	.95						1.9			559	
			2		18.0	82.0		1.10										559
			3		16.5	75.3	8.2	1.00										
Same (composite of Nos. 8833 and 8862).....	8931	A	1	3.5	16.0	72.6	7.9	1.05						2.5			559	
			2		16.5	75.3	8.2	1.00										
			3		18.0	82.0		1.15										
1 mile from: Ocean No. 1 mine, "Big Vein" (rock heading, room 34, cut 8 feet 1½ inches).	8763	B	1	2.9	16.5	72.7	7.9	1.04	4.58	79.67	1.49	5.33	2.2	7.805	14,050	559		
			2		17.0	74.9	8.1	1.07	4.39	82.07	1.53	2.81	8.040	14,480				
			3		18.5	81.5		1.16	4.78	89.33	1.67	3.06	8.755	15,750			559	
Same (right side of room 32, off Walsh's head- ing, 9½-foot cut).	8764	B	1	2.4	14.0	76.6	7.0	.90						1.6			559	
			2		15.5	84.5		.95										
			3		14.0	78.8		.95										
	8764	B	1	2.7	14.0	75.8	7.5	.85						1.7			559	
			2		14.5	77.8	7.7	.85										
			3		16.0	84.0		.95										

Same (lower dip heading, 8 feet 8½ inches).....	8765	B	1	3.0	14.0	76.0	7.0	.85					556	
			2											
			3											
Same (right entry 10, off Welsh's straight heading, room 13, 9-foot 1-inch cut).	8766	B	1	2.5	16.0	84.0	7.1	.85					559	
			2											
			3											
Same (right entry 11, off slope room 15, 9½-foot cut).	8767	B	1	2.4	16.5	83.5	7.8	.95					559	
			2											
			3											
Same (right entry 3, off slope, room 7, 9 feet 1 inch).	8768	B	1	2.7	14.0	74.4	8.9	1.00					559	
			2											
			3											
Same (composite of Nos. 8765-8768).....	8835		1	2.8	14.0	75.5	7.7	.99	4.51	80.62	1.81	4.39	559	
			2											
			3											
Same (composite of Nos. 8763 and 8764).....	8836		1	2.7	14.5	75.5	7.3	.99	4.58	80.65	1.82	4.70	559	
			2											
			3											
GARRETT COUNTY.														
Westernport, 2 miles north of Washington No. 3 mine, a (1,600 feet west of drift mouth, room 2, right entry 6, 3½-foot cut).	2018	A	1	2.47	14.03	73.95	9.55	1.23					560	
			2											
			3											
Same (1,700 feet southwest of drift mouth, room 3, left entry 8, 5½-foot cut).	2019	A	1	3.45	13.73	71.97	10.85	1.60					560	
			2											
			3											
Same (run of mine).	2274	C	1	2.33	16.11	68.43	13.13	1.69	3.69	75.21	1.29	1.89	560	
			2											
			3											
MICHIGAN.														
SAGINAW COUNTY.														
Saginaw, Bernard mine, Saginaw bed (4,000 feet east of shaft, room 15, northeast entry, 34-inch cut).	7705	A	1	11.91	31.50	49.75	6.84	1.24	5.84	66.56	1.19	18.33	561	
			2											
			3											
Same (4,000 feet east of shaft, southeast entry, 3½-foot cut).	7706	A	1	11.55	31.65	53.55	3.25	.95	5.88	69.46	1.25	19.21	561	
			2											
			3											
Same, Riverside mine (east entry off main south entry, 37-inch cut).	5282	A	1	13.79	29.34	49.86	7.01	1.17	5.20	78.53	1.41	10.12	562	
			2											
			3											
St. Charles, Gage No. 1 mine, Saginaw bed (east entry 5, on north entry 4, south side, 43-inch cut).	5286	A	1	12.12	30.10	48.67	9.11	1.40					562	
			2											
			3											

a Coal bed known locally as the "6-foot."

Table of chemical analyses—Continued.

Sample.		Proximate.					Ultimate.				Calorific value.		Reference.						
		Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.		Oxy- gen.	Air- dry- ing loss.	Calo- ries.	British thermal units.	Bul- letin No.	Page of this bulle- tin.
MISSOURI.																			
ADAIR COUNTY.																			
Locality, bed, etc.																			
10101	A	1	14.85	32.50	39.73	12.92	3.56												562
		2		38.17	46.66	15.17	4.18												
		3		44.99	55.01		4.93												
10102	A	1	14.79	32.68	38.01	14.52	3.85												562
		2		38.35	47.04	17.04	4.52												
		3		46.25	53.77		5.45												
10106	.....	1	14.59	32.69	39.45	13.91	3.69	5.56	56.12	93	19.79	11.1	5.700	10,260				562
		2		37.52	46.19	16.29	4.32	4.61	63.71	1.69	7.98		6,674	12,013					
		3		44.82	55.18		5.16	5.51	78.50	1.30	9.53		7,973	14,351					
10100	A	1	13.76	33.00	39.73	13.51	5.53											562	
		2		38.27	46.06	15.67	6.41												
		3		45.38	54.62		7.99												
10099	A	1	14.68	32.36	39.99	12.97	4.99											562	
		2		37.93	46.87	15.20	5.85												
		3		44.73	55.27		6.90												
10442	.....	1	14.40	32.29	40.17	13.14	5.29	5.56	56.43	1.00	18.58	9.8	5,721	10,298				562
		2		37.72	46.93	15.35	6.18	4.03	65.93	1.17	6.74		6,683	12,029					
		3		44.56	55.44		7.30	5.47	77.88	1.38	7.97		7,895	14,211					
10079	A	1	16.11	36.07	38.79	9.03	3.14											563	
		2		43.00	46.24	10.76	3.74												
		3		48.19	51.81		4.19												
10080	A	1	15.42	34.68	38.90	11.00	3.98											563	
		2		41.00	45.99	13.01	4.71												
		3		47.13	52.87		5.41												
10077	A	1	15.59	34.75	35.96	13.70	3.82											563	
		2		41.17	42.60	16.23	4.53												
		3		49.14	50.86		5.41												
10081	A	1	15.36	34.81	38.84	10.99	3.67	5.88	57.09	.95	21.52	9.5	5,811	10,460				563	
		2		41.13	45.89	12.98	4.22	4.93	67.45	1.12	9.30		6,866	12,359					
		3		47.27	52.73		4.85	5.67	77.51	1.29	10.68		7,890	14,202					
10086	A	1	15.29	33.11	36.62	14.98	3.49											563	
		2		39.09	43.23	17.68	4.12												
		3		47.49	52.51		4.98												
Ninovel Township, No. 1 mine, Bevier bed (1,050 feet south of drift mouth, 46-inch cut).																			

Firksville, Rocky Ford No. 1 mine, Bevier bed, (room 3, north entry 1, 300 feet northwest of shaft, 47½-inch bed, 45-inch cut).
 Same (300 feet northeast of shaft, 47½-inch bed, 45-inch cut).

Same (composite of Nos. 10101 and 10102).....

Star No. 1 mine, Bevier bed, 350 feet northwest of shaft (25-inch bed, 24-inch cut).

Same (main entry, 250 feet east of shaft, 24-inch cut).

Same (composite of Nos. 10099 and 10100).....

Morrow Township, No. 1 mine, Lexington bed (2,000 feet north of drift mouth, 40-inch bed, 31-inch cut).

Same (2,100 feet northwest of drift mouth, 45-inch bed, 36-inch cut).

Same (2,000 feet northeast of drift mouth, 45-inch bed, 36-inch cut).

Same (composite of Nos. 10077, 10079, and 10080).

Nineveh Township, No. 1 mine, Bevier bed (1,050 feet south of drift mouth, 46-inch cut).

[illegible]

No.	Locality	A	Analyses										567
			1	2	3	4	5	6	7	8	9	10	
10108	Same (south face, 1,300 feet from hoisting shaft, 18-inch cut).	A	1	11.29	34.63	42.23	11.85	4.41					567
			2		39.04	47.60	13.36	5.71					567
			3		45.06	54.94		4.81	5.43	60.40	1.16	15.56	568
			3		10.99	33.00	41.37	12.64	4.73	67.80	1.30	6.51	568
10172	Same (composite of Nos. 10166-10168).	A	1		39.32	46.48	14.20	6.29	5.51	79.09	1.52	7.59	568
			2										568
			3		45.83	54.17							568
			3										568
10221	Missouri City, Missouri City No. 1 mine, Lexington bed (west face, 1,500 feet from shaft, 22-inch cut).	A	1	14.42	33.49	40.04	12.05	2.97					568
			2		39.13	46.79	14.08	3.47					568
			3		45.54	54.46		4.04					568
			3		14.24	33.99	39.38	12.39	2.89				568
10220	Same (1,800 feet from shaft, 22-inch cut).	A	1		39.63	45.92	14.45	3.37					568
			2		46.32	53.08		3.94					568
			3		14.08	32.79	39.65	12.88	3.10				568
			3		38.43	46.47	15.10	3.63					568
10219	Same (west face, 1,800 feet from shaft, 22-inch cut).	A	1		45.27	54.73		4.28					568
			2		33.29	39.94	12.51	2.94	5.67	58.10	.99	19.79	568
			3		38.83	46.58	14.59	3.43	1.15	67.76	1.15	8.30	568
			3		45.46	54.54		4.02	5.58	79.33	1.35	9.72	568
10231	Same (composite of Nos. 10219-10221).	A	1										568
			2										568
			3										568
			3										568
10153	Trenton, 1 mile south of Trenton No. 3 mine, Tebo (?) bed (west face, 500 feet from shaft bottom, 18-inch cut).	A	1	13.36	37.47	37.72	11.45	2.98					568
			2		43.25	43.53	13.22	3.44					568
			3		49.84	50.16		3.96					568
			3		12.58	40.13	39.43	7.86	2.82				568
10151	Same (300 feet from hoisting shaft, 18-inch cut).	A	1		45.90	45.11	8.99	3.23					568
			2		50.43	49.57		3.55					568
			3		37.31	35.46	15.67	3.67					568
			3		42.19	40.00	17.72	4.15					568
10152	Same (north face, 500 feet from hoisting shaft, 18-inch cut).	A	1		51.28	48.72		5.04					568
			2		38.16	38.28	11.62	3.11	5.64	61.43	1.04	17.16	568
			3		43.33	43.47	13.20	3.53	4.89	69.76	1.18	7.44	568
			3		49.92	50.08		4.07	5.63	80.37	1.36	8.57	568
10161	Same (composite of Nos. 10151-10153).	A	1										568
			2										568
			3										568
			3										568
10351	Windsor, Bowen No. 4 mine, Bowen bed (east face, 800 feet from shaft, 60-inch cut).	A	1	14.17	32.30	43.33	10.20	3.73					569
			2		37.63	50.49	11.88	4.35					569
			3		42.70	57.30		4.94					569
			3		13.99	33.16	42.97	9.88					569
10350	Same (600 feet northwest from shaft, 60-inch cut).	A	1		38.56	49.05	11.49	4.24					569
			2		43.57	56.43		4.70					569
			3		31.51	41.67	14.12	4.57					569
			3		36.10	47.73	16.17	5.23					569
10349	Same (west face, 800 feet from shaft, 60-inch cut).	A	1		43.06	56.94		4.24					569
			2		33.24	41.88	11.37	4.98	5.89	59.16	.95	18.65	569
			3		38.43	48.42	13.15	4.72	5.08	68.40	.98	7.67	569
			3		44.25	55.75		5.43	5.85	78.70	1.13	8.83	569
10355	Same (composite of Nos. 10349-10351).	A	1										569
			2										569
			3										569
			3										569

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.				Ultimate.				Calorific value.		Reference.			
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- loss.		Calo- ries.	British thermal units.	Page of this bulle- tin.
MISSOURI—Continued.																
JOHNSON COUNTY.																
Sutherland, Beaver bed No. 1 mine, (east face, 160 feet from shaft, 19-inch cut).	10347	A	1	12.64	36.72	43.61	7.03	3.81					6.5			569
			2		42.03	49.92	8.05	4.36								
			3		45.71	54.29	4.74									
Same (west face, 2,000 feet from shaft, 20-inch cut).	10346	A	1	12.54	37.08	41.79	8.59	4.01					6.8			569
			2		42.38	47.80	9.82	4.59								
			3		47.00	53.00		5.09								
Same (north face, 200 feet from shaft).....	10348	A	1	12.11	38.43	42.14	7.32	3.77					6.1			569
			2		43.73	47.95	8.32	4.29								
			3		47.70	52.30		4.68								
Same (composite of Nos. 10346-10348)	10354	A	1	12.53	37.75	41.94	7.78	3.88	5.93	63.07	1.06	18.28	6.5	6,375	11,475	569
			2		43.16	47.95	8.89	4.44	5.19	72.10	1.21	8.17		7,288	13,118	
			3		47.37	52.63		4.87	5.69	79.14	1.33	8.97		7,999	14,398	
LAFAYETTE COUNTY.																
Corder, Black Diamond mine, Lexington bed (west face, 400 feet from shaft, 22-inch cut).	10345	A	1	12.18	33.23	43.20	11.39	4.47					7.6			570
			2		37.84	49.19	12.97	5.09								
			3		43.48	56.52		5.85								
Same (north face, 350 feet from shaft, 22-inch cut).	10344	A	1	12.71	33.54	42.42	11.33	4.51					7.9			570
			2		38.42	48.60	12.98	5.17								
			3		44.15	55.85		5.91								
Same (northwest face, 400 feet from shaft, 22-inch cut).	10343	A	1	12.48	32.96	43.13	11.43	4.50					7.7			570
			2		37.66	49.28	13.06	5.14								
			3		43.82	56.68		5.91								
Same (composite of Nos. 10343-10345).....	10353	A	1	12.34	34.36	41.97	11.33	4.55	5.83	59.33	1.08	17.88	7.7	6,110	10,998	570
			2		39.20	47.87	12.93	5.19	5.09	67.68	1.23	7.88		6,970	12,546	
			3		45.02	54.98		5.96	5.85	77.73	1.41	9.05		8,005	14,409	
1 mile southwest of Wilson mine, Lexington bed (east face, 650 feet from shaft, 20-inch cut).	10242	A	1	15.48	33.02	40.80	10.70	2.96					7.7			570
			2		39.07	48.27	12.66	3.50								
			3		41.73	55.27		4.00								
Same (southeast face, 600 feet from shaft, 20-inch cut).	10243	A	1	13.65	31.76	39.50	12.09	3.82					6.8			570
			2		40.26	45.74	14.00	4.42								
			3		46.81	53.19		5.14								

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.						Ultimate.				Calorific value.		Reference.					
	Lab- oratory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.		British thermal units.	Bul- letin No.	Page of this bulletin.		
MISSOURI—Continued.																				
LAFAYETTE COUNTY—continued.																				
Waverly, Buckhorn mine—Continued. Same (east entry 2 off main south entry, 600 feet from shaft, 46-inch cut).	10341	A	1	10.71	32.64	41.27	15.38	7.90						7.7				572		
			2		36.55	46.23	17.22	8.85												
			3		44.15	55.85		10.69											572	
Same (main east entry, 1,000 feet from shaft, 49-inch cut).	10342	A	1	12.36	31.94	40.24	15.46	6.76					9.2							
			2		36.44	45.92	17.64	7.72												
			3		44.25	55.75		9.37												
Same (composite of Nos. 10340-10342).	10352	A	1	11.40	32.96	39.86	15.78	6.89	5.28	56.43	.92	14.70	8.5	5,856	10,541		572			
			2		37.20	44.99	17.81	7.77	4.53	63.69	1.04	5.16	6,610	11,898						
			3		45.26	54.74		9.45	5.51	77.49	1.27	6.28	8,042	14,476						
Wellington, 2½ miles west of; Labor Exchange Branch No. 305 mine, Lexington bed (southwest face 1,200 feet from shaft bottom, 19-inch cut). Same (1,100 feet south of shaft, 20-inch cut).	10228	A	1	15.94	32.66	42.55	8.85	2.85					10.9							
			2		38.85	50.62	10.53	3.39												
			3		43.42	56.58		3.73												
Same (southeast face, 1,500 feet from shaft, 18-inch cut).	10229	A	1	15.08	32.20	42.86	9.86	3.79					9.2					572		
			2		37.91	50.48	11.61	4.39												
			3		42.90	57.10		4.97												
Same (composite of Nos. 10228-10230).	10230	A	1	14.27	33.58	41.46	10.69	2.37					9.9					572		
			2		39.17	48.36	12.47	2.76												
			3		44.75	55.25		3.15	5.80	69.19	1.04	21.04	5,976	10,757				572		
Bevier, 1 mile south of; No. 8 mine, Bevier bed (east entry 1, north side, 53-inch cut). Same (west entry 2, south side, 63-inch cut).	10234	A	1	15.31	32.46	42.42	9.81	3.12	4.84	69.89	1.23	8.78	10.0	5,976	10,757					
			2		38.33	50.69	11.58	3.68	5.47	79.05	1.39	9.93	7,056	12,700						
			3		43.35	56.65		4.16												
MACON COUNTY.																				
Same (run of mine 32 tons).	1226	A	1	14.74	38.53	38.95	7.78	3.79					6.2	6,214	11,185		13	573		
			2		45.19	46.68	9.13	4.45							7,288	13,118		23		
			3		49.73	50.27		4.90							8,020	14,436		48		
Same (run of mine 32 tons).	1227	A	1	12.90	36.54	39.90	10.66	3.83					5.0				13	573		
			2		41.95	46.81	12.24	4.40											23	
			3		47.80	52.20		5.01	5.12	54.79	.96	17.11	6,655	10,179				48		
Same (run of mine 32 tons).	1348	C	1	11.50	33.63	38.01	16.86	5.16					2.6	5,655	10,179		261			
			2		38.00	42.95	19.05	5.83	4.34	61.91	1.08	7.79	6,390	11,502				48		
			3		46.94	53.06		7.20	5.36	76.48	1.34	9.62	7,893	14,207						
Same (run of mine 32 tons).			1											8,332	14,998					
			2																	
			3																	

1½ miles southeast of; No. 9 shaft, Bevier bed (east face, 2,200 feet from shaft, 46-inch cut).	9988	A	1	16.21	32.96	42.51	8.32	3.48	10.3	574
Same (south face, 1,700 feet from shaft, 36-inch cut).	9989	A	2	39.34	50.73	9.93	4.15			574
Same (1,300 north and 400 feet west of shaft, 55-inch cut).	9990	A	3	43.08	56.32	4.61				574
Same (composite of 9988-9990)	9991	A	1	16.97	33.30	39.04	10.69	3.48	12.1	574
2½ miles south of; Central No. 61 mine, Bevier bed (4,000 feet south of shaft, 49-inch cut).	4196	A	2	40.11	47.01	12.88	4.19			574
Same (2,500 feet west of shaft, 5-foot 7½-inch cut).	4197	A	3	16.27	34.66	40.23	8.84	3.20	11.3	574
Same (through ¾-inch screen)	4257	C	1	16.25	33.38	40.97	9.40	3.41	11.2	574
Same (east main entry, 3,500 feet from shaft, 44-inch cut).	10191	A	2	46.28	53.72	4.27	5.75	58.25	22.14	574
Same (east entry 10, off main north entry, 4,000 feet from shaft, 44-inch cut).	10192	A	3	39.86	48.92	11.22	4.07	4.70	10.38	574
Same (main south entry, 4,500 feet from shaft, 44-inch cut).	10193	A	1	44.90	55.10	5.29	4.58	7.93	8.5	574
Same (composite of 10191-10193)	10201	A	2	15.26	33.91	42.13	8.70	4.37		574
Macon, east edge of town, sec. 16, T. 57 N., R. 14 W., Home mine, Mulky bed (west face, 80 feet from shaft, 23-inch cut).	9985	A	3	15.41	32.76	40.22	11.61	3.78	8.8	574
Same (east face, 80 feet from shaft, 24½-inch cut).	9986	A	1	38.73	47.54	13.73	4.46	6.95	10.582	574
Same (composite of Nos. 9985 and 9986)	9992	A	2	44.90	55.10	5.17	5.17	8.056	14.501	574
MILLER COUNTY.	1446	A	3	15.23	31.05	37.95	20.50	3.69	13.7	574
Barnett (Morgan County), 6 miles northeast of; about 11 miles southeast of Versailles, sec. 6, T. 42 N., R. 15 W., left side of prospect pit, pocket bed.	1447	A	1	40.85	50.05		8.4	5.02	20.54	574
Same		A	2	36.32	44.77	24.18	9.9	3.93	8.27	574
		A	3	40.85	50.05		1.31	5.18	10.89	574
		A	4	15.37	33.84	41.25	9.53	5.50	11.55	574
		A	1	39.99	48.75	11.26	3.30	8.8	8.8	575
		A	2	45.05	54.95		3.72	8.056	14.501	575
		A	3	14.04	35.16	42.00	8.80	2.73	13.7	575
		A	1	40.90	48.86	10.24	3.18	5.055	9.099	575
		A	2	45.57	54.43		3.54	5.063	10.733	575
		A	3	12.99	35.26	41.04	10.71	4.35	8.27	575
		A	4	40.52	47.17	12.31	5.00	5.865	14.157	575
		A	1	46.21	53.79		5.70	8.207	14.773	575
		A	2	13.81	34.69	41.79	9.71	3.32	8.7	575
		A	3	40.25	48.48	11.27	3.85	6.091	10.964	575
		A	1	45.36	54.64		1.23	7.067	12.721	575
		A	2	12.03	40.60	39.03	8.34	7.967	14.341	575
		A	3	46.15	44.37	9.48	3.60	7.9	7.9	576
		A	1	14.41	38.82	36.86	9.91	4.48	9.6	576
		A	2	45.36	43.06	11.58	5.23	6.241	11.234	576
		A	3	51.30	48.70		5.92	7.173	12.911	576
		A	1	13.00	40.06	37.82	9.12	8.013	14.422	576
		A	2	46.04	43.48	10.48	4.62	6.241	11.234	576
		A	3	51.43	48.57		5.16	7.173	12.911	576
		A	1	13.34	37.72	42.03	6.91	8.013	14.422	576
		A	2	43.53	48.50		5.06	6.447	11.605	576
		A	3	47.30	52.70		6.85	7.439	13.390	576
		A	1	10.57	41.11	42.17	6.15	8.084	14.551	576
		A	2	45.97	47.15	6.88	5.59			576
		A	3	49.37	50.63		6.00			576

Locality	No.	Sample	A	Analyses										6.7	6.7	6.7
				1	2	3	4	5	6	7	8	9	10			
Ryder (Prairie Township), 4 miles east of Hight, sec. 14, T. 52 N., R. 14 W., Jones No. 1 mine, Beyer bed (southwest face, 75 feet from hoisting shaft, 43½-inch bed, 42-inch cut). Same (main entry, 75 feet southwest of shaft bottom, 42-inch cut).	10180		A	1	12.07	32.74	40.01	15.18	4.67	5.31	5.31	5.31	5.31	6.7	6.7	6.7
				2	37.24	45.01	54.99	17.26	6.42	5.31	5.31	5.31	5.31	6.7	6.7	6.7
				3	45.01	54.99	54.99	17.26	6.42	5.31	5.31	5.31	5.31	6.7	6.7	6.7
10181			A	1	12.07	32.72	40.48	14.73	4.90	5.57	5.57	5.57	5.57	6.4	6.4	6.4
				2	37.21	46.04	55.30	16.75	6.69	5.57	5.57	5.57	5.57	6.4	6.4	6.4
				3	44.70	55.30	55.30	16.75	6.69	5.57	5.57	5.57	5.57	6.4	6.4	6.4
10182			A	1	11.73	34.34	41.55	12.38	4.16	5.48	5.48	5.48	5.48	6.6	6.6	6.6
				2	38.90	47.07	54.75	14.03	4.71	5.48	5.48	5.48	5.48	6.6	6.6	6.6
				3	45.25	54.75	54.75	14.03	4.71	5.48	5.48	5.48	5.48	6.6	6.6	6.6
10183			A	1	11.58	32.60	41.73	13.09	4.68	5.29	5.29	5.29	5.29	6.6	6.6	6.6
				2	36.87	47.19	56.14	15.94	4.67	5.29	5.29	5.29	5.29	6.6	6.6	6.6
				3	43.86	56.14	56.14	15.94	4.67	5.29	5.29	5.29	5.29	6.6	6.6	6.6
RAY COUNTY.																
Camden, No. 2 mine, Lexington bed (1,000 feet west of shaft, 19½-inch cut).	10206		A	1	10.14	31.98	41.52	10.36	2.94	3.51	3.51	3.51	3.51	12.1	12.1	12.1
				2	38.14	49.51	56.49	12.35	4.00	3.51	3.51	3.51	3.51	12.1	12.1	12.1
				3	43.51	56.49	56.49	12.35	4.00	3.51	3.51	3.51	3.51	12.1	12.1	12.1
10207			A	1	16.26	33.13	40.56	10.65	2.74	3.27	3.27	3.27	3.27	10.4	10.4	10.4
				2	39.56	48.44	55.04	12.00	3.72	3.27	3.27	3.27	3.27	10.4	10.4	10.4
				3	44.96	55.04	55.04	12.00	3.72	3.27	3.27	3.27	3.27	10.4	10.4	10.4
10208			A	1	16.01	33.27	40.89	9.53	2.88	3.43	3.43	3.43	3.43	9.9	9.9	9.9
				2	39.61	48.69	55.14	11.70	3.88	3.43	3.43	3.43	3.43	9.9	9.9	9.9
				3	44.86	55.14	55.14	11.70	3.88	3.43	3.43	3.43	3.43	9.9	9.9	9.9
10217			A	1	15.83	32.80	41.46	9.91	2.97	3.53	3.53	3.53	3.53	10.8	10.8	10.8
				2	38.97	49.26	55.83	11.77	3.53	3.53	3.53	3.53	3.53	10.8	10.8	10.8
				3	44.17	55.83	55.83	11.77	3.53	3.53	3.53	3.53	3.53	10.8	10.8	10.8
10194			A	1	14.09	34.35	39.62	11.94	4.03	4.03	4.03	4.03	4.03	9.7	9.7	9.7
				2	39.98	46.12	53.57	13.90	4.09	4.03	4.03	4.03	4.03	9.7	9.7	9.7
				3	46.43	53.57	53.57	13.90	4.09	4.03	4.03	4.03	4.03	9.7	9.7	9.7
10195			A	1	13.66	34.75	40.18	11.41	3.53	4.09	4.09	4.09	4.09	8.5	8.5	8.5
				2	40.24	46.54	53.22	13.22	4.09	4.09	4.09	4.09	4.09	8.5	8.5	8.5
				3	46.37	53.63	53.63	13.22	4.09	4.09	4.09	4.09	4.09	8.5	8.5	8.5
10196			A	1	13.60	34.61	40.51	11.28	4.05	4.71	4.71	4.71	4.71	9.3	9.3	9.3
				2	40.06	46.88	53.92	13.06	4.69	4.71	4.71	4.71	4.71	9.3	9.3	9.3
				3	46.08	53.92	53.92	13.06	4.69	4.71	4.71	4.71	4.71	9.3	9.3	9.3
10200			A	1	13.56	34.29	40.66	11.49	3.77	5.39	5.39	5.39	5.39	9.2	9.2	9.2
				2	39.67	47.04	54.25	13.29	3.77	5.39	5.39	5.39	5.39	9.2	9.2	9.2
				3	45.75	54.25	54.25	13.29	3.77	5.39	5.39	5.39	5.39	9.2	9.2	9.2
10197			A	1	14.86	32.79	40.35	12.00	3.45	5.03	5.03	5.03	5.03	10.2	10.2	10.2
				2	38.51	47.40	54.09	14.09	4.04	5.03	5.03	5.03	5.03	10.2	10.2	10.2
				3	44.83	54.09	54.09	14.09	4.04	5.03	5.03	5.03	5.03	10.2	10.2	10.2
10198			A	1	14.64	31.68	40.84	12.81	3.48	4.71	4.71	4.71	4.71	10.8	10.8	10.8
				2	37.11	47.85	55.04	15.04	4.08	4.71	4.71	4.71	4.71	10.8	10.8	10.8
				3	43.68	55.04	55.04	15.04	4.08	4.71	4.71	4.71	4.71	10.8	10.8	10.8
10199			A	1	14.07	31.79	38.33	15.81	4.61	4.61	4.61	4.61	4.61	10.3	10.3	10.3
				2	36.09	44.61	53.36	18.40	5.36	4.61	4.61	4.61	4.61	10.3	10.3	10.3
				3	45.33	54.07	54.07	18.40	5.36	4.61	4.61	4.61	4.61	10.3	10.3	10.3
10235			A	1	14.58	31.39	40.48	13.64	3.76	5.62	5.62	5.62	5.62	10.4	10.4	10.4
				2	39.04	47.39	55.97	15.97	4.40	5.62	5.62	5.62	5.62	10.4	10.4	10.4
				3	43.61	55.97	55.97	15.97	4.40	5.62	5.62	5.62	5.62	10.4	10.4	10.4

Ryder (Prairie Township), 4 miles east of Hight, sec. 14, T. 52 N., R. 14 W., Jones No. 1 mine, Beyer bed (southwest face, 75 feet from hoisting shaft, 43½-inch bed, 42-inch cut). Same (main entry, 75 feet southwest of shaft bottom, 42-inch cut).

10181 Same (60 feet southwest of shaft bottom, 42-inch cut).

10182 Same (composite of Nos. 10180-10182).

RAY COUNTY.

Camden, No. 2 mine, Lexington bed (1,000 feet west of shaft, 19½-inch cut).

10206 Same (900 feet west of shaft, 19½-inch cut).

10207 Same (1,200 feet west of shaft, 19½-inch cut).

10208 Same (composite of Nos. 10206-10208).

10217 Richmond, sec. 23, T. 52 N., R. 27 W., No. 50 mine, Lexington bed (100 feet north of shaft, 28-inch cut).

10194 Same (100 feet north of shaft, 28-inch cut).

10195 Same (125 feet east of shaft, 28-inch cut).

10196 Same (composite of Nos. 10194-10196).

10200 3 miles southwest of; sec. 12, T. 51 N., R. 28 W., No. 2 mine, Lexington bed (800 feet north of shaft, 30-inch bed, 28-inch cut).

10197 Same (800 feet northwest of shaft, 28-inch cut).

10198 Same (east face, 400 feet from shaft bottom, 30-inch bed, 28-inch cut).

10199 Same (composite of Nos. 10197-10199).

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.				Ultimate.				Calorific value.		Reference.				
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile car- mat- ter.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- loss.		Calo- ries. thermal unifs.	Bul- letin No.	Page of this bulle- tin.	
MISSOURI—Continued.																	
SULLIVAN COUNTY.																	
Milan (Polk Township, $\frac{1}{2}$ mile west of; No. 1 mine, Bevier bed (500 feet southeast of shaft, 38-inch cut).	10125	A	1	13.71	32.95	39.54	13.80	5.55								580	
			2		38.19	45.82	15.99	6.43									
			3		45.46	54.54		7.65									
Same (600 feet south of hoisting shaft, 38-inch cut).	10126	A	1	13.53	31.51	35.09	19.87	6.28								580	
			2		36.44	40.58	22.98	7.26									
			3		47.31	52.69		9.43									
Same (composite of Nos. 10125 and 10126).....	10143	A	1	13.11	32.24	37.53	17.12	5.93	5.40	53.38	.92	17.25	8.4	5,498	9,896	580	
			2		37.11	43.19	19.70	6.82	4.53	61.44	1.06	6.45			6,328	11,389	
			3		46.21	53.79		8.49	5.64	76.51	1.32	8.04			7,880	14,182	
MONTANA.																	
BROADWATER COUNTY.																	
Lombard, sec. 12, T. 4 N., R. 2 E.....	3665	D	1	3.22	20.05	39.79	36.94	7.12	3.23	46.95	.47	5.29	2.4	4,815	8,667	580	
			2		20.72	41.11	38.17	7.36	2.97	48.51	.49	2.50			4,975	8,955	
			3		33.51	66.49		11.90	4.80	78.46	.77	4.07			8,046	14,384	
			4		2.78	21.53	42.95	29.74	8.23	5.44	89.06	.89	4.61			8,830	15,894
1 mile west of; Hegg mine (300 feet north of slope, cut 8 feet $6\frac{1}{4}$ inches).	563b	A	1	2.78	21.53	42.95	29.74	8.23								580	
			2		25.23	44.18	30.59	8.46									
			3		36.35	63.65	12.19	6.98									
Same (400 feet northeast of opening, rib on east entry 1, entire thickness of bed not ex- posed, estimated 9 to 30 feet, 78 $\frac{1}{2}$ -inch cut).	564b	A	1	3.67	25.74	52.01	19.58	7.25								580	
			2		26.72	53.99	18.29	6.98									
			3		33.10	66.90		8.98									
Same (car sample, run of mine).....	662b	C	1	3.04	19.69	39.50	37.77	7.69	3.16	44.16	.49	6.73	1.6	4,593	8,105	580	
			2		20.31	40.72	38.97	7.93	2.91	45.54	.49	4.16			4,643	8,357	
			3		33.28	66.72		12.99	4.77	74.61	.81	6.82			7,608	13,693	
CARBON COUNTY.																	
Bear Creek, NE. $\frac{1}{2}$ sec. 6, T. 8 S., R. 21 E., new mine, 400 feet from mouth at face of entry, bed No. 3.	3619	B	1	10.46	35.27	45.03	9.24	1.84								581	
			2		33.39	50.29	10.32	2.05									
			3		43.92	59.08		2.29									
1 mile northwest of; sec. 6, T. 8 S., R. 21 E., Inter- national mine, 200 feet from entrance, No. 5 bed, 47 $\frac{1}{2}$ -inch cut.	5819	B	1	9.31	34.14	45.87	10.68	1.99	5.24	59.54	1.34	21.21	3.4	5,818	10,472	581	
			2		37.61	50.54	11.78	2.19	4.64	65.65	1.48	14.26			6,415	11,547	
			3		42.66	57.83		2.48	5.26	74.41	1.68	16.17			7,271	13,088	

Milan (Polk Township), $\frac{1}{4}$ mile west of; No. 1 mine, Beaver bed (500 feet southeast of shaft, 38-inch cut).
Same (600 feet south of hoisting shaft, 38-inch cut).

Same (composite of Nos. 10125 and 10126).....

MONTANA.

BROADWATER COUNTY.

Lombard, sec. 12, T. 4 N., R. 2 E.....
1 mile west of; Hegg mine (300 feet north of slope, cut 8 feet 6 inches).

Same (400 feet northeast of opening, rib on east entry 1, entire thickness of bed not exposed, estimated 9 to 30 feet, 78½-inch cut).
Same (car sample, run of mine).....

CARBON COUNTY.

Bear Creek, NE. $\frac{1}{4}$ sec. 6, T. 8 S., R. 21 E., new mine, 400 feet from mouth at face of entry, bed No. 3.
1 mile northwest of; sec. 6, T. 8 S., R. 21 E., International mine, 200 feet from entrance, No. 5 bed, 47½-inch cut.

1 mile south of; Foster Gulch mine, No. 3 bed, 72-inch cut.	4007	B	1	8.97	36.11	43.18	11.74	3.02	2.1	316	582
			2	39.67	47.43	51.45	12.90	3.32		341	
			3	45.55	51.45	54.45	13.90	3.81			
1 mile west of; NW. $\frac{1}{2}$ sec. 6, T. 8 S., R. 21 E., No. 2 bed, 96-inch cut.	3620	B	1	10.05	37.28	46.71	6.02	1.44	2.0	316	582
			2	41.33	51.93	56.09	6.69	1.60		341	
			3	44.35	55.05			1.72			
			4								
$1\frac{1}{2}$ miles west of; Bear Creek mine, sec. 6, T. 8 S., R. 21 E. (No. 2 bed, breast of main heading, 63-inch cut).	5820	B	1	9.67	35.92	46.39	8.02	1.64	4.1	341	583
Same (No. 3 bed, 200 feet in mine, 73-inch cut).			2	39.77	51.35	55.35	8.88	1.82			
			3	43.65	56.35			2.00			
			4	44.35	56.35			2.78			
			5	46.39	57.35			3.56			
			6	47.35	58.35			4.34			
			7	48.35	59.35			5.12			
			8	49.35	60.35			5.90			
			9	50.35	61.35			6.68			
			10	51.35	62.35			7.46			
			11	52.35	63.35			8.24			
			12	53.35	64.35			9.02			
			13	54.35	65.35			9.80			
			14	55.35	66.35			10.58			
			15	56.35	67.35			11.36			
			16	57.35	68.35			12.14			
			17	58.35	69.35			12.92			
			18	59.35	70.35			13.70			
			19	60.35	71.35			14.48			
			20	61.35	72.35			15.26			
			21	62.35	73.35			16.04			
			22	63.35	74.35			16.82			
			23	64.35	75.35			17.60			
			24	65.35	76.35			18.38			
			25	66.35	77.35			19.16			
			26	67.35	78.35			19.94			
			27	68.35	79.35			20.72			
			28	69.35	80.35			21.50			
			29	70.35	81.35			22.28			
			30	71.35	82.35			23.06			
			31	72.35	83.35			23.84			
			32	73.35	84.35			24.62			
			33	74.35	85.35			25.40			
			34	75.35	86.35			26.18			
			35	76.35	87.35			26.96			
			36	77.35	88.35			27.74			
			37	78.35	89.35			28.52			
			38	79.35	90.35			29.30			
			39	80.35	91.35			30.08			
			40	81.35	92.35			30.86			
			41	82.35	93.35			31.64			
			42	83.35	94.35			32.42			
			43	84.35	95.35			33.20			
			44	85.35	96.35			33.98			
			45	86.35	97.35			34.76			
			46	87.35	98.35			35.54			
			47	88.35	99.35			36.32			
			48	89.35	100.35			37.10			
			49	90.35	101.35			37.88			
			50	91.35	102.35			38.66			
			51	92.35	103.35			39.44			
			52	93.35	104.35			40.22			
			53	94.35	105.35			41.00			
			54	95.35	106.35			41.78			
			55	96.35	107.35			42.56			
			56	97.35	108.35			43.34			
			57	98.35	109.35			44.12			
			58	99.35	110.35			44.90			
			59	100.35	111.35			45.68			
			60	101.35	112.35			46.46			
			61	102.35	113.35			47.24			
			62	103.35	114.35			48.02			
			63	104.35	115.35			48.80			
			64	105.35	116.35			49.58			
			65	106.35	117.35			50.36			
			66	107.35	118.35			51.14			
			67	108.35	119.35			51.92			
			68	109.35	120.35			52.70			
			69	110.35	121.35			53.48			
			70	111.35	122.35			54.26			
			71	112.35	123.35			55.04			
			72	113.35	124.35			55.82			
			73	114.35	125.35			56.60			
			74	115.35	126.35			57.38			
			75	116.35	127.35			58.16			
			76	117.35	128.35			58.94			
			77	118.35	129.35			59.72			
			78	119.35	130.35			60.50			
			79	120.35	131.35			61.28			
			80	121.35	132.35			62.06			
			81	122.35	133.35			62.84			
			82	123.35	134.35			63.62			
			83	124.35	135.35			64.40			
			84	125.35	136.35			65.18			
			85	126.35	137.35			65.96			
			86	127.35	138.35			66.74			
			87	128.35	139.35			67.52			
			88	129.35	140.35			68.30			
			89	130.35	141.35			69.08			
			90	131.35	142.35			69.86			
			91	132.35	143.35			70.64			
			92	133.35	144.35			71.42			
			93	134.35	145.35			72.20			
			94	135.35	146.35			72.98			
			95	136.35	147.35			73.76			
			96	137.35	148.35			74.54			
			97	138.35	149.35			75.32			
			98	139.35	150.35			76.10			
			99	140.35	151.35			76.88			
			100	141.35	152.35			77.66			
			101	142.35	153.35			78.44			
			102	143.35	154.35			79.22			
			103	144.35	155.35			80.00			
			104	145.35	156.35			80.78			
			105	146.35	157.35			81.56			
			106	147.35	158.35			82.34			
			107	148.35	159.35			83.12			
			108	149.35	160.35			83.90			
			109	150.35	161.35			84.68			
			110	151.35	162.35			85.46			
			111	152.35	163.35			86.24			
			112	153.35	164.35			87.02			
			113	154.35	165.35			87.80			
			114	155.35	166.35			88.58			
			115	156.35	167.35			89.36			
			116	157.35	168.35			90.14			
			117	158.35	169.35			90.92			
			118	159.35	170.35			91.70			
			119	160.35	171.35			92.48			
			120	161.35	172.35			93.26			
			121	162.35	173.35			94.04			
			122	163.35	174.35			94.82			
			123	164.35	175.35			95.60			
			124	165.35	176.35			96.38			
			125	166.35	177.35			97.16			
			126	167.35	178.35			97.94			
			127	168.35	179.35			98.72			
			128	169.35	180.35			99.50			
			129	170.35	181.35			100.28			
			130	171.35	182.35			101.06			
			131	172.35	183.35			101.84			
			132	173.35	184.35			102.62			
			133	174.35	185.35			103.40			
			134	175.35	186.35			104.18			
			135	176.35	187.35			104.96			
			136	177.35	188.35			105.74			
			137	178.35	189.35			106.52			
			138	179.35	190.35			107.30			
			139	180.35	191.35			108.08			
			140	181.35	192.35			108.86			
			141	182.35	193.35			109.64			
			142	183.35	194.35			110.42			
			143	184.35	195.35			111.20			
			144	185.35	196.35			111.98			
			145	186.35	197.35			112.76			
			146	187.35	198.35			113.54			
			147	188.35	199.35			114.32			
			148	189.35	200.35			115.10			
			149	190.35	201.35			115.88			
			150	191.35	202.35			116.66			

West side of Belt Creek, SE. $\frac{1}{2}$ SW. $\frac{1}{2}$ sec. 36, T. 19 N., R. 6 E., Hill mine, ^a 75 feet from mouth, 38-inch cut.	3755	B	1	9.58	23.24	52.24	14.94	2.00	4.28	58.74	-67	19.37	5.0	5,518	9,932	589
			2		25.70	57.78	16.52	2.21	3.56	64.97	-74	12.00		6,103	10,985	356
			3		30.79	69.21		2.65	4.38	77.82	-89	14.27		7,311	13,160	
			4							73.94	-91	14.77	2.1	7,448	13,405	
Belt, east side of Belt Creek, SE. $\frac{1}{2}$ NE. $\frac{1}{2}$ sec. 26, T. 19 N., R. 6 E., Millard mine, ^a 64-inch cut.	3513	B	1	4.62	30.51	46.14	18.73	3.39								316
			2		31.99	48.37	19.64	3.76								356
			3		39.81	60.19		4.68	4.36	58.10	-64	17.09	2.6	5,623	10,121	590
			4		49.34		18.14	1.67	3.85	62.50	-69	11.64		6,049	10,888	356
West side of Belt Creek, SE. $\frac{1}{2}$ NW. $\frac{1}{2}$ sec. 26, T. 19 N., R. 6 E., Anaconda mine ^a (entry 18, 58-inch cut.)	3512	B	1	7.05	25.47	49.34	18.14	1.80	3.85	62.50	-69	11.64		7,516	13,529	
			2		27.40	53.08	19.52	2.23	4.79	77.66	-88	14.79		7,636	13,745	316
			3		34.05	65.95			3.92	79.44	-88	14.79	2.7	5,481	9,866	356
			4						4.89	56.14	-73	16.29		5,854	10,537	
Same (south entry 9, 53-inch cut.)	3514	B	1	6.37	27.55	45.20	20.88	2.04	3.92	79.39	-78	11.35		7,534	13,581	
			2		29.42	48.28	22.30	2.18	4.43	77.17	-78	11.35		7,534	13,581	316
			3		37.87	62.13		2.80	4.55	78.39	-78	11.35		7,086	13,834	356
			4						4.52	78.39	-78	11.35		7,086	13,834	
14 miles north of east side of Belt Creek, NE. $\frac{1}{2}$ sec. 23, T. 19 N., R. 6 E., Orr mine, ^a main entry, 500 feet from mouth, 49-inch cut.	3754	B	1	10.88	20.27	41.97	26.88	1.79	4.52	78.39	-78	11.35	5.4	4,301	7,742	591
			2		22.74	47.10	30.16	2.01	2.82	53.15	-58	11.28		4,826	8,687	356
			3		32.56	67.44		2.88	4.03	76.11	-84	16.14		6,910	12,438	
			4						4.15	78.36	-86	16.63		7,049	12,688	
Eden, 2 miles northeast of; north side of Ming Coulee, Belt Creek bed, NW. $\frac{1}{2}$ SE. $\frac{1}{2}$ sec. 32, T. 18 N., R. 4 E., Bickett mine, 85-inch cut.	4118	B	1	4.82	27.17	46.13	21.88	2.84	4.36	56.98	-72	13.22	1.9	5,578	10,040	316
			2		28.54	48.47	22.99	2.98	4.01	59.86	-76	9.40		5,860	10,548	356
			3		37.07	62.93		3.87	5.21	77.74	-98	12.20		7,610	13,698	
6 miles southwest of; east side of Smith River, NW. $\frac{1}{2}$ NW. $\frac{1}{2}$ sec. 20, T. 17 N., R. 3 E., Patterson mine, ^a 55-inch cut.	4117	B	1	6.17	27.03	52.03	14.77	4.36	4.43	61.62	-93	13.89	2.2	6,077	10,939	316
			2		28.81	55.45	15.74	4.65	3.99	65.07	-99	8.96		7,215	12,987	356
			3		34.19	65.81		5.51	4.73	77.94	-118	10.64		7,087	13,837	
			4						5.02	82.49	-124	11.25		8,004	14,407	
8 miles southwest of; west side of Hound Creek, SW. $\frac{1}{2}$ SE. $\frac{1}{2}$ sec. 24, T. 17 N., R. 2 E., Carville mine, ^a 60-inch cut.	4114	B	1	4.54	27.44	47.95	20.07	4.09	4.23	58.66	-87	12.08	1.7	5,818	10,472	316
			2		28.75	50.22	21.03	4.28	3.91	61.45	-91	8.42		6,095	10,971	356
			3		36.40	63.60		5.42	4.95	77.81	-115	10.67		7,717	13,891	
			4						5.23	82.27	-122	11.28		8,031	14,456	
Geyser, about 7 miles southwest of; on west side of Otter Creek, Belt Creek bed, NW. $\frac{1}{2}$ sec. 29, T. 17 N., R. 9 E., Nollar mine, 175 feet from mouth, 4-foot cut.	3759	B	1	8.76	25.72	50.36	15.16	3.91	4.40	58.93	-79	16.81	4.8	5,626	10,127	593
			2		28.19	55.19	16.62	4.29	3.76	64.59	-87	9.87		6,166	11,099	316
			3		33.81	66.19		5.14	4.51	77.46	-104	11.85		7,385	13,311	356
About 74 miles southwest of; SW. $\frac{1}{2}$ NW. $\frac{1}{2}$ sec. 3, T. 16 N., R. 9 E., Merced mine, 50 feet from mouth, 43-inch cut.	3758	B	1	10.18	24.82	45.25	19.75	3.01					4.6			316
			2		27.63	50.38	21.99	3.35								356
			3		35.42	64.58		4.29								
Sand Coulee, 1 mile south of; west side of Straight Coulee, tributary to Sand Coulee NE. $\frac{1}{2}$ sec. 23, T. 19 N., R. 4 E., Gerber mine, ^a	4119	B	1	7.49	27.29	51.44	13.78	2.32	4.08	62.21	-88	16.13	2.6	6,115	11,007	593
			2		29.50	55.60	14.90	2.51	4.89	79.02	-95	10.23		6,610	11,898	356
Spion Kop, near; 14 miles east of Rensford, mouth of Williams Creek, south side, SE. $\frac{1}{2}$ NW. $\frac{1}{2}$ sec. 3, T. 17 N., R. 8 E., Larson mine, ^a weathered, 38-inch cut.	3757	B	1	13.07	21.79	43.26	21.88	1.30	4.23	48.95	-69	21.95	6.0	4,639	8,350	594
			2		25.07	49.76	25.17	1.50	3.20	57.46	-79	11.88		5,336	9,605	356
			3		33.50	66.50		2.00	4.27	76.79	-106	15.88		7,132	12,838	
Stockett, NW. $\frac{1}{2}$ NW. $\frac{1}{2}$ sec. 36, T. 19 N., R. 4 E., Cottonwood mine, ^a 88-inch cut.	4115	B	1	6.01	28.43	51.42	14.14	2.38	4.46	63.61	-91	14.50	2.4	6,196	11,153	594
			2		30.25	54.71	15.04	2.53	4.03	67.67	-97	9.76		6,592	11,866	356
			3		35.60	64.40		2.98	4.75	79.66	-114	11.47		7,759	13,986	

a Belt Creek bed.

Table of chemical analyses—Continued.

Sample.		Proximate.				Ultimate.				Calorific value.		Reference.				
Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.	British thermal units.	Bul- letin No.	Page of this bulle- tin.
MONTANA—Continued.																
CHouteau County.																
8622	B	1	16.83	27.89	43.78	11.50	1.19	5.58	54.37	1.14	26.22	8.8	5,313	9,553	381	595
Ada, 2½ miles southeast of; NE. ¼ SE. ¼ sec. 5, T. 30 N., R. 18 E., Gibbitts (Tiger Ridge) mine, 60 feet south of opening, 28-inch cut.																
6550	B	3	33.53	33.93	52.64	13.83	1.43	4.46	65.38	1.37	13.53	.....	6,389	11,500	381	595
Big Sandy, 6 miles east of; Mackton mine, NW. ¼ SW. ¼ sec. 18, T. 28 N., R. 14 E., Big Van bed, 155 feet from mouth, 8 feet ¼ inch cut.																
6009	B	3	12.07	39.48	47.40	11.54	.80	5.17	79.86	1.50	15.72	5.5	5,332	9,598	381	595
6½ miles east of; Mack mine, NE. ¼ SE. ¼ sec. 18, T. 28 N., R. 14 E., 20 feet north and 200 feet off main entry west, ¼-foot cut.																
6316	B	2	14.86	34.58	44.20	6.36	.46	5.41	58.56	.85	19.73	5.6	6,980	12,564	381	596
Chinook, 4 miles west of; Sands & O'Keefe mine, NW. ¼ NW. ¼ sec. 18, T. 33 N., R. 19 E., 250 feet from entry, 77-inch bed, 61-inch cut.																
7156	B	3	22.80	28.76	39.32	9.03	.56	4.78	74.33	1.08	19.23	12.0	7,008	12,614	381	596
6 miles northwest of; sec. 29, T. 34 N., R. 19 E., outcrop, Leabos mine, 4-foot cut.																
6317	B	2	23.60	26.71	37.23	12.46	.85	5.56	45.62	.98	34.83	14.2	6,882	12,386	381	597
7 miles south of; NW. ¼ SW. ¼ sec. 30, T. 32 N., R. 20 E., Kerr mine, 240 feet in, 3½-foot bed, 35-inch cut.																
6319	B	3	20.48	28.81	39.27	11.44	.81	4.60	71.35	1.53	21.66	10.3	6,068	12,002	381	597
9 miles south of; SW. ¼ NW. ¼ sec. 5, T. 31 N., R. 19 E., Roder mine, 125 feet in, 55-inch bed, 38-inch cut.																
*9150	B	2	23.11	26.62	40.50	9.77	.56	.....	.....	.....	.....	12.1	4,762	8,572	381	598
Same (150 feet in mine), 63-inch bed, 51½-inch cut.																
6318	B	3	39.66	36.60	60.34	12.71	.73	.....	.....	.....	.....	.....	7,095	12,771	381	598
About 6 miles southwest of; Tumbler prospect, about 250 feet from mouth, 64-inch bed, 59½-inch cut.																
6380	B	3	21.41	28.03	41.60	8.99	.58	5.84	51.96	1.22	31.41	14.7	4,965	8,937	381	599
About 4 miles northeast of; Matheson prospect, about 65 feet from mouth, 59-inch bed, 48-inch cut.																
6381	B	3	21.41	26.59	41.14	10.83	.84	4.97	74.65	1.55	15.76	.....	6,317	11,371	381	599
About 63 miles north of; Leabos prospect, about 45 feet from mouth, 60-inch bed, 40-inch cut.																
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	B	1	2	3	40.10	18.00	11.90	1.08	5.53	40.39	.80	40.30	19.3	3.841	6,914	381
Harlem, 10 miles northwest of; McDaniel's mine, 175 feet in, 30½-inch bed, 25-inch cut.	6315	1	2	3	57.29	25.71	17.00	1.54	3.14	57.70	1.37	23.48	5,487	9,877	600
Hayro, 1½ miles north of; Alcott mine, 120 feet in, 57½-inch bed, 37½-inch cut.	6474	1	2	3	26.58	38.97	13.63	1.80	3.78	69.52	1.34	20.47	.....	6,611	11,900	601
Same (100 feet from entrance).....	6801	1	2	3	35.03	51.36	13.61	.69	.....	.....	.....	.....	16.0	4,540	8,172	601
1½ miles northwest of; Hayro mine, 565 feet in, 69½-inch bed, 30-inch cut.	6479	1	2	3	40.55	59.45	12.06	1.05	5.80	46.00	.85	34.41	18.0	6,925	12,465	601
3½ miles northwest of; Kinney mine, end of main entry, 31-inch bed, 2½-foot cut.	6475	1	2	3	37.04	46.95	16.01	.88	4.06	61.07	1.13	16.56	.....	4,408	7,934	601
4 miles southwest of; Electric mine, 125 feet from entry mouth, 43-foot bed, 3½-foot cut.	6473	1	2	3	44.10	55.90	16.01	1.39	4.83	72.71	1.35	19.72	.....	5,852	10,534	601
4 miles southeast of; SW ¼ sec. 36, T. 32 N., R. 16 E., on Bull Hook Creek, prospect, 7-inch bed.	6476	1	2	3	23.80	43.90	10.34	1.07	5.07	47.98	.99	34.42	15.5	4,563	8,213	601
7 miles east of; Brown mine (abandoned), 65 feet in, 64-inch bed, 59-inch cut.	6477	1	2	3	30.50	56.25	13.25	.77	4.14	61.48	1.27	19.69	.....	5,847	10,525	601
7 miles northwest of; Barrott's mine, 250 feet in, 4-foot bed, 3½-foot cut.	6548	1	2	3	35.16	64.84	10.81	.89	4.77	70.88	1.46	22.00	14.1	6,711	12,134	602
8 miles southeast of; NE ¼ sec. 4, T. 31 N., R. 17 E., Staton's mine, 250 feet in, 69½-inch bed, 59½-inch cut.	6478	1	2	3	38.01	48.29	13.70	.95	.....	.....	.....	.....	.....	4,076	8,417	602
8½ miles southeast of; SE ¼ NE ¼ sec. 5, T. 31 N., R. 17 E., Clack mine, room on east side main entry, 205 feet S. 15° W. 62-inch bed, 50-inch cut.	6640	1	2	3	44.04	55.96	13.24	1.10	.....	.....	.....	.....	.....	5,924	10,603	602
12 miles northwest of; Scheun prospect, 75 feet from mouth of entry, 57-inch bed, 3½-foot cut.	6549	1	2	3	29.31	34.61	13.24	.80	.....	.....	.....	.....	.....	6,864	12,355	602
		1	2	3	45.86	54.14	8.63	1.26	.....	.....	.....	.....	.....	5,087	7,898	603
		1	2	3	17.41	71.57	9.42	1.04	.....	.....	.....	.....	.....	6,205	11,169	603
		1	2	3	19.01	70.01	9.42	1.24	.....	.....	.....	.....	.....	7,775	12,195	603
		1	2	3	27.05	35.43	18.55	1.48	.....	.....	.....	.....	.....	4,153	7,475	603
		1	2	3	33.38	43.73	22.89	1.83	.....	.....	.....	.....	.....	5,125	9,225	603
		1	2	3	43.29	56.71	.....	2.37	.....	.....	.....	.....	.....	6,646	11,963	603
		1	2	3	29.28	35.55	13.66	.73	.....	.....	.....	.....	.....	4,363	7,853	603
		1	2	3	37.30	45.30	17.40	.93	.....	.....	.....	.....	.....	5,558	10,004	603
		1	2	3	45.16	54.84	.....	1.13	.....	.....	.....	.....	.....	6,729	12,112	604
		1	2	3	26.67	37.40	6.74	.67	6.39	46.04	.94	39.22	22.9	4,353	7,865	604
		1	2	3	37.05	52.82	9.52	.95	4.35	65.02	1.33	18.73	.....	6,147	11,065	604
		1	2	3	41.62	58.38	.....	1.05	4.42	71.86	1.47	20.70	.....	6,794	12,229	604
		1	2	3	27.96	39.18	7.27	.58	6.19	49.08	1.03	35.85	14.2	4,607	8,293	604
		1	2	3	37.68	52.65	9.77	.78	4.50	65.96	1.38	17.61	.....	6,191	11,144	604
		1	2	3	41.65	58.35	.....	.86	.....	.....	.....	.....	.....	6,801	12,350	605
		1	2	3	31.44	36.44	10.88	.87	4.99	73.10	1.53	19.52	12.9	4,580	8,244	605
		1	2	3	39.92	46.27	13.81	1.10	.....	.....	.....	.....	.....	5,815	10,467	605
		1	2	3	46.32	53.68	.....	1.28	.....	.....	.....	.....	.....	6,747	12,145	605
		1	2	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	606
Fallon, bank of Yellowstone River, T. 13 N., R. 52 E., (Glford mine, from outcrop, 4½-foot cut (sample wet with rain).	2426	1	2	3	25.82	29.37	11.28	.68	.....	.....	.....	.....	25.6	.....	.....	316
West bank of Yellowstone River, at mouth of Cottonwood Creek, 6½-foot cut, in outcrop (fresh).	2429	1	2	3	38.84	44.10	16.97	1.02	.....	.....	.....	.....	.....	.....	.....	316
Miles, 1 mile north of; sec. 22, T. 8 N., R. 47 E., 150 feet from entrance, Kitcher bed (4½-inch cut).	5783	1	2	3	28.47	35.32	7.58	.60	.....	.....	.....	.....	20.3	.....	.....	606
5 miles northeast of; SE ¼ sec. 19, T. 8 N., R. 48 E., Kitcher mine, Kitcher bed (5-foot cut).	5964	1	2	3	40.02	49.38	10.60	.96	.....	.....	.....	.....	.....	.....	.....	606
Same (Leonard sample, 1905, 200 feet from entrance).	2425	1	2	3	44.77	55.23	.....	1.08	.....	.....	.....	.....	.....	.....	.....	606
		1	2	3	26.15	35.45	9.19	.75	.....	.....	.....	.....	.....	.....	.....	341
		1	2	3	36.94	50.08	12.98	1.06	.....	.....	.....	.....	.....	.....	.....	341
		1	2	3	42.45	57.57	.....	1.22	.....	.....	.....	.....	.....	.....	.....	341
		1	2	3	27.40	32.97	10.03	.68	.....	.....	.....	.....	.....	.....	.....	341
		1	2	3	38.62	46.83	14.25	.97	.....	.....	.....	.....	.....	.....	.....	341
		1	2	3	45.39	54.61	.....	1.13	.....	.....	.....	.....	.....	.....	.....	341
		1	2	3	30.48	31.34	7.93	.40	.....	.....	.....	.....	.....	.....	.....	341
		1	2	3	43.70	44.93	11.37	.86	.....	.....	.....	.....	.....	.....	.....	341
		1	2	3	49.30	56.70	.....	.92	.....	.....	.....	.....	.....	.....	.....	341

CUSTER COUNTY.

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.				Ultimate.				Calorific value.		Reference.		
	Lab- ora- tory No.	Con- di- tion.	Mois- ture.	Vola- tile car- mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.		British thermal units.	
MONTANA—Continued.															
CUSTER COUNTY—continued.															
Miles—Continued.															
5 miles southeast of; SE. $\frac{1}{4}$ sec. 6, T. 7 N., R. 48 E., Weaver (old) mine, near Signal Butte, Weaver bed (59-inch cut).	3701	B	1 2 3	29.13 35.74 45.36	25.33 35.74 43.05	30.51 43.05 54.64	15.03 21.21 8.68	0.55 .78 .98	40.09 56.57 71.79	0.54 .76 .97	38.19 17.35 22.03	3,701 5,222 6,028	6,662 9,400 11,950	316 341 341	
6 miles south of; on military reservation, near Tongue River, sec. 25, T. 7 N., R. 47 E., Weaver mine, 100 feet from shaft, Kircher bed.	5780	B	2	29.52	27.96	33.84	12.32	.99				4,286	7,715	608	
19 miles east of; sec. 3, T. 7 N., R. 50 E., Dorniny bed, outcrop (5-foot cut).	5962	B	2	35.51	26.75	28.47	8.87	.40				6,081	10,946	608	
25 miles east of; on left bank of Powder River, sec. 2, T. 7 N., R. 51 E., Smith mine, Kircher bed (3 $\frac{1}{2}$ -foot cut).	5963	B	3	31.75	48.09	51.91	7.2	.72				6,935	6,363	341	
30 miles northwest of; near northwest corner of county, at head of Youall Creek, sec. 20, T. 12 N., R. 45 E., Roberts prospect, cut from upper part of outcrop, lower part covered (4-foot cut).	3782	B	2	31.29	26.57	35.24	6.90	.46				5,451	9,866	609	
35 miles northwest of; near northwest corner of county, at head of Crow Rock Creek, T. 12 N., R. 45 E., selected pieces from outcrop.	3783	B	3	42.98	57.02			.74				6,936	12,485	316	
DAWSON COUNTY.															
Glendive, 8 miles north of; NW. $\frac{1}{4}$ sec. 27, T. 17 N., R. 55 E., Snyder mine (240 feet from entrance, 6 $\frac{1}{2}$ -foot cut).	2423	B	1 2 3	34.94 41.48 45.40	26.99 54.00 60.67	32.46 35.00 39.33	5.61 11.00 1.89	.74 1.14 1.24				22.3 40.2 57.9		316 609	
Same (whole bed, 6 $\frac{1}{2}$ -foot cut).	3812	B	1	34.55	35.34	22.91	7.20	1.10	6.60	42.40	57.42	15.5	3,939	7,090	316
Same (drift entrance, 6 $\frac{1}{2}$ -foot cut, weathered)...	3815	B	2	33.65	29.63	29.82	6.90	.81	4.74	72.79	98.19	13.5	6,762	12,172	610
Same (head of drift, south of entrance, coal 6 $\frac{1}{2}$ feet thick).	3816	B	3	34.89	43.48	50.16	10.40	1.22	3.56	60.82	92.23	1.03	5,694	10,087	610
			2	66.78	20.83	12.39	8.07	2.04	3.97	67.87	93.25	14.2	6,254	11,267	316
			2	66.78	20.83	12.39	8.07	2.04	3.89	63.99	86.16	14.2	5,959	10,726	

Same (100 feet from entrance).....	3817	B	3	1	76.23	23.77	2.33	4.43	73.04	98	19.22	6.802	12.243	610
			2	1	31.20	42.42	6.80	5.99	43.93	55	41.93	4.076	7.337	
			2	2	61.71	19.52	8.89	3.67	63.91	80	20.57	5.930	10.674	
Same (main entry, 200 feet from mine mouth).	3819	B	3	1	68.40	31.51	8.33	4.07	70.92	89	22.83	6.581	11.846	610
			2	1	33.06	30.30	12.44	1.03				11.1		
			2	2	45.27	42.29	1.54							
Same (main entry, 25 feet from mine mouth).	3820	B	3	1	51.70	46.30	1.76							610
			2	1	33.06	39.82	6.08	5.99	43.93	91	19.22	4.310	7.771	
			2	2	59.49	31.16	9.35	3.67	63.91	80	20.57	4.432	11.614	
			2	3	65.02	34.38	1.02	4.07	70.92			7.118	12.812	316
12 miles southwest of; on Clear Creek, sec. 10, T. 14 N., R. 64 E., weathered sample from surface outcrop of 44-foot bed, 4-foot cut.	2424	B	3	1	26.84	32.14	6.83					17.5		610
			2	2	48.45	41.55	4.2							
Jordan, on Big Dry Creek, 91 miles northwest of Miles, 43-inch cut in 75-inch outcrop.	3842	B	3	1	31.33	24.37	13.33	3.54			20.3			316
			2	2	35.78	44.51	19.41							
			3	3	44.40	55.60	.67							
FERGUS COUNTY.														
Buffalo, 7½ miles southwest of; (4 miles east of Greene), NE. ¼ NE. ¼ sec. 20, T. 12 N., R. 14 E., Williams mine, 165 feet from entrance, 24-foot cut.	5265	B	3	1	14.44	28.80	45.65	11.11			7.3			341
			2	2	33.66	53.35	12.99	4.77						390
			3	3	38.69	61.31	5.48							
8 miles southwest of; NW. ¼ NW. ¼ sec. 28, T. 12 N., R. 14 E., Saager Canyon mine, 85 feet from entrance, 4-foot cut.	5267	B	3	1	17.03	27.34	43.83	11.80			9.0			341
			2	2	32.95	52.83	14.22	4.99						390
			3	3	38.41	61.59	5.82	4.34	72.67	87	16.30	6.942	12.496	
Forest Grove, 1½ miles west of; SW. ¼ SE. ¼ sec. 1, T. 14 N., R. 20 E., Hobson mine, 140 feet in, 41-inch cut.	5295	B	3	1	11.35	29.74	46.56	12.35			3.1			612
			2	2	33.55	52.52	13.93	4.05	58.91	82	18.42	6.589	11.840	390
			3	3	38.98	61.02	5.87	4.93	77.20	1.07	10.93	7.655	13.779	
4 miles northwest of; SE. ¼ NW. ¼ sec. 35, T. 15 N., R. 20 E., Ben Hill mine, 140 feet in, 28-inch cut.	5294	B	3	1	18.56	24.59	48.36	8.49			9.6			612
			2	2	30.19	59.39	10.42	4.57						390
			3	3	33.70	66.30	5.10	5.13	56.70	70	28.02	7.546	13.583	
Glitledge, 2 miles southwest of; sec. 33, T. 10 N., R. 20 E., Sherman mine, 300 feet in, 39-inch cut.	5473	B	3	1	15.65	27.05	49.67	7.63			9.7			613
			2	2	32.07	58.88	9.05	1.82	4.01	81	16.73	6.287	11.317	390
			3	3	35.26	64.74	5.31	2.36	4.41	73.91	92	6.913	12.443	
2½ miles southeast of; SE. ¼ SE. ¼ sec. 33, T. 16 N., R. 20 E., Shipley mine, 100 feet in, 19-inch cut.	5474	B	3	1	7.39	26.31	55.46	10.84			2.8			613
			2	2	28.41	59.89	11.70	2.58						390
			3	3	32.17	67.83	3.16	4.86	61.85	76	15.80	7.331	13.286	
3½ miles southeast of; NE. ¼ NW. ¼ sec. 3, T. 15 N., R. 20 E., Cliffe mine, 700 feet in, 33-inch cut.	5476	B	3	1	7.98	26.63	56.05	9.34			3.4			614
			2	2	28.94	60.91	10.15	4.77	4.31	70.47	83	6.948	12.506	390
			3	3	32.21	67.79	5.31	4.80	78.43	92	10.54	7.733	13.919	
4 miles south of; NW. ¼ NE. ¼ sec. 9, T. 15 N., R. 20 E., Gold Reef mine, 35-inch cut.	5471	B	3	1	8.34	29.87	53.63	8.16			3.7			614
			2	2	32.59	58.51	8.90	4.51	5.10	66.23	76	6.540	11.772	390
			3	3	35.77	64.23	4.95	4.99	79.32	91	9.83	7.135	12.813	
Lewisdown, 2 miles southeast of; NW. ¼ NW. ¼ sec. 26, T. 15 N., R. 18 E., Spring Creek mine, 58-inch bed, 3-foot cut.	5272	B	3	1	15.35	28.27	48.08	8.30			8.2			614
			2	2	33.40	56.79	9.81	5.42	61.15	71	19.89	5.897	10.615	341
			3	3	37.03	62.92	5.93	4.38	72.24	84	7.38	6.966	12.539	390
4½ miles northeast of; NE. ¼ SW. ¼ sec. 32, T. 16 N., R. 19 E., Brew & Parson mine, 300 feet in, 68-inch cut.	5291	B	3	1	12.59	26.71	43.46	17.24			5.3			615
			2	2	30.56	49.72	19.72	4.02	64.73	87	8.72	5.972	10.750	390
			3	3	38.07	61.93	5.01	4.91	78.14	1.08	10.86	7.459	13.390	
Same (90 feet in mine, 33-inch cut).....	5293	B	3	1	12.31	28.41	51.31	7.97			6.4			341
			2	2	32.40	58.51	9.09	4.42				7.094	11.149	390
			3	3	35.64	64.36	4.86					7.770	13.986	

Table of chemical analyses—Continued.

Sample.		Locality, bed, etc.	Proximate.				Ultimate.				Air-drying loss.	Calorific value.		Reference.
			Moisture.	Volatile matter.	Fixed carbon.	Ash.	Sulphur.	Hydrogen.	Carbon.	Nitrogen.		Calories.	British thermal units.	
Lab- ora- tory No.	Kind.		Con- di- tion.											Page of this bul- letin.
MONTANA—Continued.														
FERGUS COUNTY—continued.														
Lewistown—Continued.														
5296	B	8 miles east of; center of sec. 24, T. 15 N., R. 19 E., Hamilton mine, 460 feet in, 44-foot cut.	1	12.66	29.62	48.81	8.91	3.68	.....	.....	6.0	6,061	10,910	390
			2	.....	32.91	55.89	10.20	4.21	.....	.....	.....	6,940	12,492	616
5292	B	8½ miles southwest of; NW. ¼ NW. ¼ sec. 25, T. 15 N., R. 19 E., Black Diamond mine, 400 feet in, 44-foot cut.	2	14.13	27.37	58.43	10.07	3.69	5.06	7.4	7.0	7,728	13,919	341
			2	.....	31.87	56.40	11.73	4.30	4.06	69.72	.....	7,794	12,145	390
5343	B	9 miles east of; NE. ¼ SW. ¼ sec. 18, T. 15 N., R. 20 E., Flaherty mine, 170 feet in, 46-inch cut.	3	9.84	38.71	63.80	13.32	4.87	4.60	78.99	10.57	7,644	13,759	341
			2	.....	31.83	46.74	21.43	5.14	.....	.....	3.5	5,283	9,509	390
5475	B	9 miles northeast of; NE. ¼ SE. ¼ sec. 7, T. 16 N., R. 19 E., Nevins mine, 600 feet in, 30-inch cut.	1	6.89	40.51	59.49	21.85	5.48	.....	.....	2.8	5,229	9,412	341
			2	.....	38.73	45.80	23.47	6.64	.....	.....	.....	5,616	10,208	390
5289	B	9 miles southeast of; SW. ¼ NE. ¼ sec. 6, T. 14 N., R. 20 E., Pelter mine, 315 feet in, 34-inch cut.	3	18.88	25.18	48.34	7.60	7.70	5.19	57.31	6.4	5,417	9,751	341
			2	.....	31.04	59.59	9.37	3.35	3.81	70.65	.....	5,678	12,020	390
5472	B	Malden, 5 miles northwest of. SW. ¼ NW. ¼ sec. 32, T. 17 N., R. 19 E., on Warm Spring Creek, Mace mine, 500 feet in, 43-inch cut.	3	.....	34.25	65.75	15.97	5.01	3.70	77.96	13.25	7,359	13,264	341
			2	2.84	27.35	54.29	15.92	4.87	4.20	.....	1.6	6,512	11,792	390
5274	B	Moore, 10 miles southeast of; on Rock Creek, SW. ¼ SE. ¼ sec. 3, T. 13 N., R. 17 E., Knox mine, 250 feet in, 29-inch cut.	1	9.18	29.69	43.31	17.82	9.39	.....	.....	1.9	7,976	14,357	341
			2	.....	32.67	47.69	19.62	10.34	.....	.....	.....	5,371	9,667	390
5266	B	9 miles southeast of; on Rock Creek, SE. ¼ NE. ¼ sec. 16, T. 13 N., R. 17 E., Sharp mine, 300 feet in, 34-foot cut.	1	15.72	29.64	43.81	10.83	2.81	.....	.....	6.5	7,359	13,246	341
			2	.....	35.17	51.98	12.85	3.33	.....	.....	.....	.....	.....	390
5264	B	9½ miles southeast of; on Rock Creek, SE. ¼ NW. ¼ sec. 15, T. 13 N., R. 17 E., Cooper mine, 38-inch cut.	3	16.86	30.23	45.00	7.31	3.52	5.62	58.27	8.2	5,726	10,307	341
			2	.....	36.36	54.85	8.79	3.64	4.51	70.08	.....	6,887	12,397	390
5273	B	10 miles southeast of; on Rock Creek, NW. ¼ SW. ¼ sec. 14, T. 13 N., R. 17 E., Rand mine, 50 feet in, 24-foot cut.	3	.....	39.87	60.13	18.01	6.05	4.95	76.84	6.1	5,381	9,686	341
			2	13.90	26.25	41.84	18.01	7.03	.....	.....	.....	5,249	11,234	390
6829	B	Musselshell (Yellowstone County), 7 miles northwest of; T. 9 N., R. 27 E., Homestead's prospect, 25 feet in, 28-inch cut, Homestead bed.	3	18.14	27.22	50.49	4.15	8.89	5.46	60.48	14.0	5,789	10,420	381
			2	33.25	61.68	5.07	1.08	4.20	73.88	7,072	12,730
			3	35.03	64.97	1.14	77.73	99	15.62	7,750	13,410

8801	B	1	14.3	28.9	51.8	5.9	50																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												</
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7 miles from; Mountain House mine (Korentz mine, new name), 4,300 feet from entrance.	3725	B	3	1	11.75	35.85	64.15	1.75	5.69	84.02	1.27	7.27	8.317	14.971	627
			1	2	36.38	41.35	10.52	.39	5.40	61.17	.87	21.65	5.976	10,757	
			2	3	41.22	46.86	11.92	.44	4.63	69.31	.99	12.71	6.711	12,188	
Livingston, NE. $\frac{1}{2}$ NW. $\frac{1}{2}$ sec. 25, T. 2 S., R. 8 E., Livingston mine, 100 feet in, 31-inch cut.	6596	B	3	1	6.26	30.60	53.20	.50	5.26	78.70	1.12	14.42	7.088	13,888	628
			1	2	32.64	36.88	26.26	.68	4.77	53.79	.86	13.04	5.440	9,792	
			2	3	30.60	39.35	28.01	.73	4.34	57.38	.92	8.02	5.803	10,445	
Myersburg, 8 miles north of; sec. 36, T. 5 N., R. 8 E., coal-bin sample.	5723	B	3	1	45.34	54.66	14.97	.63	6.03	79.71	1.28	11.97	8.061	14,510	628
			2	2	30.83	51.75	15.35	.64	6.03	79.71	1.28	11.97	8.061	14,510	341
			3	3	31.60	53.05	15.35	.75	7.026	12,647			7.026	12,647	
			3	3	37.33	62.67			8.300	14,940			8.300	14,940	
RAVALLI COUNTY.															
Darby, 3 miles north of; NW. $\frac{1}{2}$ NE. $\frac{1}{2}$ sec. 34, T. 4 N., R. 21 W., Nicholson mine.	3589	B	1	1	30.59	36.21	20.82	.66					20.0		628
			2	2	52.17	20.99	17.84	.95							
			3	3	63.49	36.51		1.16							
ROSEBUD COUNTY.															
Birney, 12 miles southeast of; sec. 2, T. 8 S., R. 43 E., 60 feet in, Kendrick mine, Kendrick bed, 11 $\frac{1}{2}$ -foot cut.	5403	B	1	1	28.86	29.50	38.36	3.28	6.31	48.66	.84	40.59	4.573	8,231	628
			2	2		41.47	53.92	4.61	4.34	68.40	1.18	21.02	6.428	11,570	341
			3	3		43.47	56.53	.47	4.55	71.70	1.24	22.04	6.739	12,129	
SWEET GRASS COUNTY.															
Nye, 6 miles north of; NW. $\frac{1}{2}$ NE. $\frac{1}{2}$ sec. 29, T. 4 S., R. 16 E., Loffer mine, face of entry, 5 $\frac{1}{2}$ -foot bed, 55-inch cut.	6320	B	1	1	6.75	32.37	45.47	16.41	5.04	61.47	1.10	15.45	5.933	10,079	629
			2	2		42.12	57.88	17.66	4.60	63.92	1.18	10.13	6.363	11,453	
Winnecook (Jeagher County), 6 $\frac{1}{2}$ miles southeast of; on Joe Creek, SE. $\frac{1}{2}$ sec. 1, T. 6 N., R. 16 E., prospect drift, 20 feet from entry, 28-inch cut.	5735	B	2	1	10.37	22.28	32.06	35.29	5.58	80.00	1.43	12.30	7.722	13,900	629
			2	2		24.86	33.77	39.37	.58				4.007	7,213	341
			3	3		41.00	39.00		1.07				4.471	8,048	
8 miles southeast of; on south bank of Holcomb Creek, SE. $\frac{1}{2}$ sec. 11, T. 6 N., R. 16 E., weathered, surface outcrop, 30-inch cut.	5732	B	1	1	25.26	23.51	36.68	14.55	.41				7.374	13,274	630
			2	2		31.45	49.08	19.47	.55				3.546	6,383	341
			3	3		39.05	60.95	.68	.57				4.744	8,540	
													5.891	10,005	
VALLEY COUNTY.															
Culbertson, 3 miles north of; sec. 8, T. 28 N., R. 56 E., Bruegger mine, west side of main entry. Entry bed, about 8 $\frac{1}{2}$ feet. Bed G.	7059	B	1	1	43.16	22.03	28.99	5.82	.29				38.7	3,333	630
			2	2		38.76	51.00	10.24	.51				5.864	10,555	381
			3	3		43.18	56.82		.57				6.533	11,759	
YELLOWSTONE COUNTY.															
Buckey, 3 miles northeast of; NE. $\frac{1}{2}$ NW. $\frac{1}{2}$ sec. 36, T. 6 N., R. 26 E., Dorrity bed, 2-inch cut, badly weathered.	5798	B	1	1	16.95	30.78	39.64	12.63	.49				3.2	4,776	630
			2	2		37.06	47.73	15.21	.59				5.751	10,352	341
3 $\frac{1}{2}$ miles north of; NE. $\frac{1}{2}$ NE. $\frac{1}{2}$ sec. 27, T. 6 N., R. 26 E., Dorrity bed, 2-foot cut, badly weathered.	5801	B	1	1	16.91	33.05	39.15	10.89	.34				3.6	4,640	631
			2	2		39.78	47.11	13.11	.41				5.584	10,051	341
			3	3		45.78	54.22		.47				6.427	11,567	
4 $\frac{1}{2}$ miles northeast of; NE. $\frac{1}{2}$ SW. $\frac{1}{2}$ sec. 30, T. 6 N., R. 27 E., Mammoth 8 $\frac{1}{2}$ -foot bed (upper 18-inch bench, badly weathered).	5797	B	1	1	24.59	32.86	27.94	14.61	.41				3.449	6,208	631
			2	2		43.58	37.05	19.37	.54				4.574	8,233	341
			3	3		54.05	45.95		.67				5.673	10,211	
Same (lower 7-foot bench, slightly weathered).	5799	B	1	1	17.45	31.16	45.05	6.34	.49				3.0	5,023	631
			2	2		37.75	54.57	7.68	.59				6.812	12,262	341
			3	3		40.89	59.11		.64				7.379	13,282	

a Eagle coal bed.

b Mines now included in Musselshell County are indicated by footnote.

c Now included in Musselshell County.

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.		Reference.				
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.	British thermal units.	Bul- letin No.	Page of this bulle- tin.	
MONTANA—Continued.																		
YELLOWSTONE COUNTY—continued.																		
Buckey—Continued. 15 miles northwest of a sec. 23, T. 8 N., R. 25 E., 1 mile east of Roundup (Fergus County), Roundup bed, 4-foot cut.	5800	B	1	12.09	28.71	50.90	7.7	0.54	5.44	64.26	.88	21.18	2.7	6,130	11,034		341	631
			2	32.88	58.30	8.82	8.82	.62	4.62	73.60	1.01	11.33		7,021	12,638		381	
			3	36.06	63.94			.35	5.06	80.72	1.11	12.43		7,700	13,860			
Huntley, 28 miles northeast of; surface prospect in Mammoth 27-foot 9-inch bed (6-foot cut).	6831	B	1	17.43	31.16	48.09	3.32	.35					12.9	5,711	10,280		381	632
			2	37.74	58.24	4.02	4.02	.42						6,917	12,451			
			3	39.32	60.68			.44						7,207	12,973			
Same (lower bench, 5-foot cut).....	6828	B	1	18.65	29.62	46.61	5.12	.78					14.8	5,495	9,892		381	632
			2	36.41	57.30	6.29	6.29	.96						6,755	12,160			
			3	38.85	61.15			1.02						7,208	12,976			
NW. $\frac{1}{4}$ SE. $\frac{1}{4}$ sec. 10, T. 6 N., R. 28 E., Cow Gulch prospect, Dougherty 59 $\frac{1}{2}$ -inch bed, 58 $\frac{1}{2}$ -inch cut.	6830	B	1	21.56	30.46	43.02	4.96	.72					16.3	5,009	9,016		381	632
			2	38.83	54.85	6.32	6.32	.92						6,386	11,495			
			3	41.45	58.55			.98						6,817	12,271			
Musselshell, $\frac{1}{4}$ miles southeast of; sec. 2, T. 8 N., R. 29 E., surface outcrop on Hawk Creek, Nevor- big & Todd mine, ^a Custer bed, 30 $\frac{1}{2}$ -inch cut, weathered.	* 9129	B	1	20.68	28.61	44.66	6.03	.79					14.8	5,409	9,736			633
			2	36.07	56.30	7.63	7.63	1.00						6,820	12,276			
			3	39.05	60.95			1.08						7,383	13,289			
Same (6 miles east of; SE. $\frac{1}{4}$ SE. $\frac{1}{4}$ sec. 17, T. 9 N., R. 30 E., on Carpenter Creek, Rob- bins prospect, ^a 75 feet from mouth, Carpen- ter bed, 54-inch cut).	7197	B	1	22.77	27.00	45.58	4.65	.32	5.47	53.49	.93	35.14	13.5	4,924	8,863		381	633
			2	34.96	59.02	6.02	6.02	.41	3.81	69.26	1.20	19.30		6,376	11,477			
			3	37.20	62.80			.44	4.05	73.70	1.28	20.53		6,785	12,213			
Same (8 miles south of; SE. $\frac{1}{4}$ NE. $\frac{1}{4}$ sec. 29, T. 8 N., R. 29 E., on Fished Creek, Grant prospect, ^a 100 feet from mouth, Buckley bed, 36-inch cut).	7195	B	1	16.66	27.85	48.07	7.42	1.00	5.61	59.22	.97	25.78	7.2	5,681	10,226		381	633
			2	33.42	57.68	8.90	8.90	1.20	4.51	71.06	1.16	13.17		6,817	12,271			
			3	36.69	63.31			1.32	4.95	78.00	1.27	14.46		7,483	13,469			
7 miles east of; NW. $\frac{1}{4}$ SW. $\frac{1}{4}$ sec. 28, T. 9 N., R. 30 E., Custer prospect, 15 feet in, Custer bed, 28-inch cut, weathered.	8467	B	1	28.6	28.0	36.2	7.2	.65					19.3	3,950	7,115		431	634
			2	38.0	51.0	10.0	10.0	.95						5,535	9,965			
			3	43.0	57.0			1.05						6,155	11,080			
9 miles east of; sec. 26, T. 9 N., R. 30 E., surface out- crop, Grant prospect, ^a Carpenter Creek bed, 94 $\frac{1}{2}$ -inch cut.	8466	B	1	28.7	25.5	39.4	6.4	.55					18.7	4,020	7,240		381	634
			2	36.0	55.1	8.9	8.9	.85						5,640	10,150		431	
			3	39.5	60.5			.90						6,195	11,150			
9 $\frac{1}{2}$ miles east of; NE. $\frac{1}{4}$ SE. $\frac{1}{4}$ sec. 26, T. 9 N., R. 30 E., surface outcrop, ^a near Grant prospect, mine	8465	B	1	29.4	25.5	38.6	6.5	.35					19.3	3,980	7,170		381	635
			2	35.9	55.0	9.1	9.1	.50						5,635	10,150		431	

[illegible]

b Bed 15 to 16 feet, with many partings, probably all included in cut.

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.						Ultimate.				Calorific value.		Reference.		
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.	British thermal units.	Bul- letin No.	Page of this bulle- tin.
NEW MEXICO—Continued. COLFAX COUNTY—continued.	256D	A	1	2.17	37.93	45.08	14.82	0.69					0.7	6,992	12,586	368	640
			2		38.78	46.08	15.14	.71						7,147	12,865		
			3		45.69	54.31		.83						8,315	14,967		
	271D	C	1	1.96	35.96	46.20	15.88	.75	5.01	68.26	1.01	9.09		6,913	12,443		
			2		36.68	47.12	16.20	.77	4.88	69.62	1.03	7.50		7,051	12,692		
			3		43.77	56.23		.91	5.83	83.08	1.23	8.95		8,414	15,145		
	6606	A	1	3.09	32.25	49.40	15.26	.73					1.9	6,709	12,238		640
			2		33.28	50.97	15.75							7,016	12,629		
			3		39.50	60.50		.87	4.04	69.96	1.33	11.53	.5	7,263	14,989		
	6286	B	1	2.12	36.06	50.22	11.60	.64	4.80	71.48	1.36	9.86		7,203	13,246		641
2				36.84	51.31	11.85	.74	5.45	81.09	1.54	11.18		8,348	15,026			
3				41.79	58.21		.68						6,441	11,594			
6285	B	1	5.37	34.01	47.95	12.67	.72					2.0	6,806	12,251		641	
		2		35.94	50.67	13.39	.83	5.26	68.94	1.20	16.29	2.9	7,858	14,144			
		3		41.50	58.50		.48	4.84	73.92	1.29	11.04		6,932	12,473			
6287	B	1	6.73	32.94	52.50	7.83	.51	4.84	73.92	1.29	11.04		7,432	13,377		642	
		2		35.32	56.28	8.40	.56	5.28	80.70	1.41	12.05	5.1	8,114	14,605			
		3		38.56	61.44		.52						6,559	11,806			
6284	B	1	9.78	33.11	47.54	9.57	.58						7,270	13,086		642	
		2		36.70	52.69	10.61	.65	4.82	68.38	.90	7.73	1.8	8,133	14,639			
		3		41.06	58.94		.77	4.66	70.10	.92	5.69		6,778	12,200			
6595	B	1	2.45	27.54	52.61	17.40	.79	4.66	70.10	.92	5.69		6,948	12,506		642	
		2		28.23	53.93	17.84	.96	5.67	85.32	1.12	6.93	1.0	8,546	15,221			
		3		34.36	65.64		.72						7,293	13,127			
3221	A	1	2.50	35.47	52.90	9.13	.74						7,480	13,464	332	643	
		2		36.38	54.26	9.36	.82						8,253	14,855			
		3		40.14	59.86		.64										
3222	A	1	3.48	33.02	50.58	12.92	.66						2.0			13	643
		2		34.21	52.40	13.39	.77										
		3		39.50	60.50		.73	4.95	66.19	1.23	10.23	2.0	6,607	11,893			
3295	C	1	3.45	32.06	47.82	16.67	.76	4.73	68.55	1.27	7.43		6,843	12,317			
		2		33.20	49.54	17.26	.91	5.72	82.86	1.54	8.97		8,271	14,888			
		3		40.14	59.86			5.77	83.62	1.55	9.06		8,328	14,990			

NEW MEXICO—Continued.
COLFAX COUNTY—Continued.

Dawson, No. 2 mine (6,000 feet north of opening, room 21, off seventh east entry, off first north, 54-foot cut). "Raton" bed.

Same (run of mine, 32 tons).

Same (93-foot cut).

Raton, 3 miles northeast of; sec. 16, T. 31 N., R. 24 E., Sugarito mine (1,800 feet from mouth, 55½-inch cut). Sugarito bed.

5 miles northeast of; sec. 10, T. 31 N., R. 24 E., Hatza mine (30 feet from mouth of abandoned entry, 4½-inch cut). Sugarito bed.

6 miles east of; sec. 24, T. 31 N., R. 24 E., Latimore prospect (300 feet from mouth of abandoned entry, 58½-inch cut).

About 10 miles east of; sec. 10, T. 51 N., R. 25 E., from nearly clean face exposed in gulch near Scop mine (not in operation, 49-inch cut).

About 32 miles west of; Dead Easy mine a (face 222 feet from opening, includes lower bench exclusive of bone, 91-inch bed, 61-inch cut).

Van Houten, Willow mine, "Raton" bed (2,000 feet northwest of drift mouth, 63½-inch cut).

Same (3,000 feet from drift mouth, 72½-inch cut).

Same (run of mine).

3307	C	1	4.36	32.21	47.51	15.92	.83	4.70	65.96	1.18	11.32	3.0	6,618	11,912	332
Same (lump, over $\frac{1}{2}$ -inch screen, 10 tons),.....		2		33.08	46.67	16.65	.87	4.51	68.97	1.23	7.77		6,930	12,456	
		3		40.40	56.60		1.04	5.41	82.74	1.48	9.33		8,302	14,944	
3308	C	4						5.46	83.62	1.50	9.42		8,365	16,057	332
Same (slack, through $\frac{1}{2}$ -inch screen, 40 tons),.....		1	2.75	33.19	48.54	16.52	.64	4.54	67.70	1.18	10.12	1.4	6,769	12,165	
		2		33.13	49.91	16.96	.66	4.60	69.62	1.21	7.89		6,950	12,510	
		3		40.61	56.39		.78	5.54	82.83	1.45	9.40		8,270	14,886	
6417	B	4	2.42	33.69	54.42	9.47	.66	5.59	83.48	1.45	9.48		8,318	14,972	644
		1		34.53	55.77	9.70		5.21	72.84	1.10	10.72	1.4	7,303	13,145	
		2		38.24	61.76			5.06	74.65	1.13	8.78		7,484	13,471	
6418	B	1	2.51	34.64	54.03	8.82	.75	5.60	82.67	1.25	9.73		8,288	14,918	644
Same (lower bench),.....		2		35.53	55.42	9.05	.78	5.60	73.05	1.20	10.07	1.5	7,404	13,327	
		3		39.07	60.93		.86	6.35	75.54	1.23	8.05		7,594	13,669	
6631	A	1	2.43	34.30	53.30	9.77	.64	5.88	83.06	1.35	8.85		8,350	15,030	6
		2		35.36	54.63	10.01	.66					1.3	7,321	13,178	
6630	A	3		39.29	60.71		.73						7,563	13,505	6
Willow No. 6 mine (800 feet south, room 5, left entry		1	2.84	33.26	51.53	12.37	1.19	5.26	71.59	1.24	8.35	1.5	7,065	12,717	
3, 49 $\frac{1}{2}$ -inch c. i.), "Raton" bed.		2		34.23	53.04	12.73	1.22	5.08	73.68	1.28	6.01		7,271	13,088	
Yankoe, NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 1, T. 31 N., R. 24 E., Yankoe		3		39.22	60.78		1.40	5.82	84.43	1.47	6.88		8,331	14,996	
No. 3 mine, working here 1,000 feet from mouth		1	5.02	36.78	46.20	12.00	.56	5.15	66.01	1.28	15.00	2.4	6,702	12,004	645
of main entry, 50 $\frac{1}{2}$ -inch cut. Yankoe bed.		2		38.78	48.64	12.63	.59	4.53	69.50	1.35	11.10		7,057	12,703	
3 miles southeast of: sec. 20, T. 31 N., R. 25 E.,		3		41.33	55.67		.68	5.63	79.54	1.55	12.70		8,077	14,539	645
Lewellyn mine 160 feet from mouth of main		1	9.04	34.89	48.89	7.18	.54	5.34	67.48	1.22	18.24	3.5	6,813	12,203	
entry, 78 $\frac{1}{2}$ -inch cut.		2		38.36	53.75	7.89	.59	4.77	74.19	1.34	11.22		7,491	13,484	
2 miles north of: sec. 20, T. 32 N., R. 25 E., Reynolds		3		41.65	58.35		.63	5.18	80.55	1.45	12.18		8,133	14,689	646
mine (77 $\frac{1}{2}$ -inch bed: 50 $\frac{1}{2}$ -inch cut).		1	5.03	33.84	48.24	11.29	.63	4.97	64.93	1.21	16.97	3.4	6,622	11,920	
M KINLEY COUNTY.		2		35.80	52.18	11.96	.67	4.60	68.81	1.28	12.68		7,017	12,631	
		3		40.73	59.27		.76	5.22	78.16	1.45	14.41		7,970	14,346	
3522	B	1	7.76	37.60	38.66	15.98	1.48	5.67	60.55	.99	15.33	3.9	6,248	11,246	316
Blackrock, 10 miles northeast of: Zuni Indian School		2		40.76	41.92	17.32	1.19	5.21	65.65	1.07	9.15		6,713	12,191	
mine, 50 feet from mouth, upper bed, 40-inch		3		49.30	50.70		1.94	6.31	79.40	1.30	11.65		8,193	14,747	316
Chaves, 16 miles northeast of: T. 16 N., R. 11 W., Tiejon		1	15.03	37.26	41.97	5.74	.57					5.2			285
prospect, 57-inch cut.		2		43.85	49.39	6.76	.67								
2134	B	3		47.03	52.97	7.72	.54					9.3			285
Clarkville, sec. 14, T. 15 N., R. 19 W., Clark mine,		1	13.95	38.43	42.12	5.50	.63								
Clark (8 $\frac{1}{2}$ -foot) bed (sample represents 7 $\frac{1}{2}$		2		44.66	48.95	6.39	.67								
feet).		3		47.71	52.29										
14 miles northwest of (5 miles southeast of St.		1	14.49	37.08	44.58	3.85	.48	6.02	63.41	1.23	25.08	5.1	6,371	11,468	316
Michaels, Ariz.); mine of St. Michaels Indian		2		43.37	52.13	4.50	.48	5.16	74.16	1.44	14.20		7,451	13,412	
School, 53-inch bed (sample from fresh stock		3		45.41	54.59		.50	5.40	77.65	1.51	14.94		7,801	14,042	
pile).															
Gallup, $\frac{1}{2}$ miles east of: NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 14, T. 15 N.,		1	9.13	40.77	40.23	9.87	1.27								316
R. 18 W., Otero mine (Crown Point 6 $\frac{1}{2}$ -foot		2		44.87	44.27	10.86	1.40								48
bed, 400 feet from opening, 58-inch cut)		3		50.33	49.67		1.57								238
Same, 500 feet from opening (Thatcher 4-foot		1	9.68	41.42	40.82	8.08	1.55						6,467	11,623	648
bed, 4-foot cut).		2		45.86	45.19	8.95	1.72						7,149	12,869	
		3		50.37	49.03		1.88						7,862	14,134	48
1029	A	1	9.40	40.05	37.87	12.68	.84								261
Same, 500 feet from opening (Thatcher bed,		2		44.21	41.79	14.00	.93								48
4-foot cut).		3		51.40	48.60		1.08								48

a "Raton" bed.

Rio Arriba mine, sec. 7, T. 31 N., R. 1 E., Lower (40-inch) bed, 33½-inch cut.	2122	B	1	3.99	38.03	51.04	5.94	1.01										285 341
SANDOVAL COUNTY.																		
Algodones, 12 miles southeast of; sec. 17, T. 13 N., R. 6 E., Sloan mine, Hopewell bed, 3-foot cut.	1013	B	1	9.68	42.32	41.36	6.64	.66										316 48
SANDOVAL COUNTY.																		
14 miles southeast of; 27 miles northeast of Albuquerque, sec. 33, T. 13 N., R. 6 E., Hagan mine, main entry, 700 feet from mouth, Hopewell bed, 49-inch cut.	1012	B	1	7.81	44.72	41.80	5.67	.69										316 48
SANDOVAL COUNTY.																		
Fruitland, 1½ miles northwest of; NW ¼ sec. 4, T. 29 N., R. 15 W., Young or Stephens mine, Carbonero (16-foot 10½-inch) bed, 3-foot cut.	2464	B	1	9.89	38.44	41.48	10.19	.64						4.5	6.276	11,297	285	
SANDOVAL COUNTY.																		
Pendleton, ½ miles northwest of; sec. 21, T. 32 N., R. 13 W., Jones mine, Carbonero 48½-foot bed, 7-foot cut.	2465	B	1	8.30	35.56	47.89	8.25	.67						4.6	6.965	12,537	316	
SANDOVAL COUNTY.																		
Putnam, 1 mile west of; T. 21 N., R. 11 W., south wall of Chaco Canyon, Pueblo Bonita mine, 60 feet from mouth, 94-inch bed.	3823	B	1	17.46	32.92	41.26	8.36	.21						9.7	7,853	14,135	285	
SANDOVAL COUNTY.																		
Tiz Natzin, 25 miles northwest of Putnam, 2 miles up Coal Creek from Rio Chaco, in 50-foot drift, 38-inch cut.	3811	B	1	15.79	34.99	39.85	9.37	1.78						7.6	5,539	9,970	316	
SANDOVAL COUNTY.																		
Pecos, 6½ miles north of; NE ¼ sec. 28, T. 18 N., R. 12 E., Cowles mine, Cowles bed, 15-inch cut.	6862	B	1	1.72	22.27	51.39	24.62	2.75						.9	6,578	11,840	381	
SANTA FE COUNTY.																		
Madrid, Madrid No. 1 mine, 200 feet in main entry, 34-inch cut. White Ash (?) bed.	6153	B	1	5.70	2.18	86.13	5.99	.69						2.9	7,371	13,268	653	
SANTA FE COUNTY.																		
White Ash mine (old slope), 120 feet in main entry, 54-inch cut. White Ash bed.	6154	B	1	3.76	34.42	56.93	4.89	.57						1.4	7,488	13,478	653	
SOCORRO COUNTY.																		
Carthage, Bernal mine, Carthage (53-foot) bed (700 feet south, room 2 off right entry 1), 58½-inch cut.	889D	A	1	3.35	39.44	49.85	7.36	.83						1.3	5,197	14,755	5	
SOCORRO COUNTY.																		
Same (870 feet south, left dip 2, 58½-inch cut)...	890D	A	1	3.91	38.87	46.82	10.40	.70						2.1	7,079	12,742	5	
SOCORRO COUNTY.																		
Same (run of mine).....	972D	C	1	2.96	37.20	45.12	15.17	.81						6.0	6,786	12,215	5	
SOCORRO COUNTY.																		
NE ¼ NE ¼ sec. 15, T. 5 S., R. 2 E., Hilton mine, Carthage bed, 5-foot cut.	6004	B	1	3.03	38.03	51.56	7.38	.92						1.4	7,369	13,264	381	
SOCORRO COUNTY.																		
			1	3.92	39.22	53.17	7.01	.95						1.4	7,599	13,078	381	
					42.45	57.55		1.03						1.27	8,225	14,805		

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.						Ultimate.				Calorific value.		Reference.				
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.	British thermal units.	Bul- letin No.	Page of this bulle- tin.		
NORTH DAKOTA.																			
BILLINGS COUNTY.																			
Beach, 8 miles north of; NW, $\frac{1}{4}$ sec. 16, T. 141 N., R. 105 W., open pit, 109-inch bed, 83-inch cut. "E" bed.	5779	B	1	34.50	29.76	28.53	7.21	0.99					21.0	3,730	6,714		341	654	
			2		45.43	43.56	11.01	1.51							5,694	10,249			
			3		51.05	48.95		1.70								6,398	11,516		
9 miles north of; NW, $\frac{1}{4}$ sec. 8, T. 141 N., R. 105 W., open pit, 94-foot cut. "E" bed.	5781	B	1	35.72	31.88	23.54	8.86	1.53					23.3	3,538	6,368		341	655	
			2		40.60	36.62	13.78	2.38							5,504	9,907			
			3		57.53	42.47		2.76								6,384	11,491		
9 miles southeast of; sec. 25, T. 139 N., R. 105 W., open pit; 7-foot cut. "F" bed.	5782	B	1	35.40	38.25	20.71	5.64	1.84					17.0	3,781	6,806		341	656	
			2		59.21	32.06	8.73	1.30							3,853	10,535			
			3		64.86	35.14		1.42								6,411	11,540		
Medora, sec. 26, T. 140 N., R. 102 W., outcrop of 94-foot bed, 84-foot cut, 30 feet from mouth of drift. "G" bed.	2428	B	1	38.45	28.02	27.84	5.69	1.54					31.4				341	656	
			2		45.52	45.24	9.24	.88											
			3		50.16	49.84		.97											
Sand Creek, 8 miles northwest of post office, Stillwagon (Russell) ranch, sec. 31, T. 135 N., R. 101 W., outcrop of 43-foot bed, 35-foot cut.	2000	B	1	43.78	26.07	26.33	3.82	.61					35.3	3,318	5,972		285	656	
			2		46.37	46.84	6.79	1.09							5,902	10,624			
			3		49.75	50.25		1.16								6,332	11,398		
Sontinel Butte, about 3 miles south of post office, SE, $\frac{1}{4}$ sec. 5, T. 139 N., R. 104 W., outcrop of 24-foot bed, 20-foot 11-inch cut. "G" bed.	2427	B	1	29.78	32.31	31.35	6.56	1.88					22.4				341	657	
			2		46.01	44.65	9.34	1.25											
			3		60.74	49.26		1.38											
3 miles south of post office, SE, $\frac{1}{4}$ sec. 5, T. 139 N., R. 104 W., open pit, bed 21 feet 2 inches, cut 14 feet. "F" bed.	5784	B	1	43.51	25.23	24.87	6.39	1.04					32.6	3,220	5,814		341	658	
			2		44.67	44.02	11.31	1.84							3,718	10,292			
			3		50.37	49.63		2.07								6,447	11,605		
BOWMAN COUNTY.																			
Scranton, Scranton mine (700 feet east of opening, butt entry 2, Upper bed, 83-foot cut).	7499	A	1	41.43	23.86	28.45	6.26	.74					36.04	3,467	6,241		14	658	
			2		40.74	48.57	10.69	1.26							5,920	10,686			
			3		45.62	54.38		1.41							6,629	11,932			
Same (450 feet north of opening, main entry, 10-foot 10-inch cut).	7500	A	1	40.49	24.12	26.90	8.49	.70					34.8					658	
			2		40.53	45.20	14.27	1.18											
			3		47.28	52.72		1.38											
M'KENZIE COUNTY.																			
Cartwright, 3 miles southeast of; sec. 3, T. 150 N., R. 103 W., outcrop of 7-foot 10-inch bed.	2201	B	1	28.09	37.78	27.86	6.27	.72					10.1				285	659	
			2		52.54	38.74	8.72	1.00											
			3		57.56	42.45		1.10											

M'LEAN COUNTY.									
1935	A	1	40.53	27.05	27.37	5.05	.76	32.3	3,691
		2	45.48	46.03	8.49	1.28			6,044
		3	49.70	50.30	1.40	1.20			11,171
1938	A	1	41.88	26.11	26.73	5.38	.96	33.5	6,206
		2	44.92	46.00	9.08	1.65			6,783
		3	49.41	50.59	1.81	1.15			23
2243	C	1	35.96	31.02	24.37	7.75	1.15	12.7	3,927
		2	40.84	38.06	12.10	1.80	1.89	41.92	11,038
		3	56.71	43.29	2.04	4.51	17.69	15.55	6,132
		4				4.61	18.07	12,735	7,075
MORTON COUNTY.									
7841	B	1	32.07	25.64	31.65	10.64	1.19	19.3	3,790
		2	37.75	46.59	15.66	1.75			6,822
		3	44.76	55.24	8.61	2.07			5,579
7842	B	1	32.47	27.11	34.61	5.81	.37		6,615
		2	40.14	51.26	8.10	.55		23.1	4,028
		3	43.92	56.08	.69				7,250
7839	B	1	33.12	25.53	36.05	5.30	.69		5,965
		2	38.17	53.91	7.92	1.03		21.1	6,526
		3	41.45	58.55	1.12				11,747
									4,148
									6,202
									11,164
									12,123
STARK COUNTY.									
1971	A	1	42.06	24.55	25.73	7.66	1.13	35.6	3,421
		2	42.37	44.41	13.22	1.95			6,158
		3	48.82	51.18	2.25	2.25			10,627
1972	A	1	42.81	26.84	23.93	6.42	.96		5,904
		2	46.93	41.84	11.23	1.93		33.9	6,804
		3	52.87	47.13	1.89	1.89			12,247
1279	C	1	35.38	29.59	25.68	9.35	1.55		48
		2	45.79	39.74	14.47	2.40	2.80		23
		3	53.54	46.46					6,923
		4							10,714
2289	C	1	32.64	29.19	26.75	11.42	.54	23.6	3,846
		2	43.34	39.71	16.95	4.15	.84	41.72	5,952
		3	52.19	47.81		4.85	15.88		10,714
7537	A	1	42.04	23.40	27.67	6.89	.98		6,959
		2	40.37	47.74	11.89	4.99	18.58		12,526
		3	45.82	54.18		1.01	19.12		7,094
7538	A	1	42.34	22.20	29.68	5.78	.73	10.4	3,872
		2	38.50	51.48	10.02	6.33	14.63		6,970
		3	42.79	57.21	.68				10,346
									5,748
									6,922
									12,460
									3,377
									6,079
									5,826
									11,902
WARD COUNTY.									
7587	A	1	36.64	22.64	30.74	9.98	.45	28.9	3,552
		2	35.73	48.52	15.75	.71			6,394
		3	42.41	57.59		.84			10,091
7589	A	1	37.18	23.29	28.91	10.62	.55	29.3	5,606
		2	37.07	46.03	16.90	.88			6,054
		3	44.61	55.39	1.06				11,977

a Samples 1 and 2 from widely separated points in same mine.

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.		Reference.				
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.	British thermal units.	Bul- letin No.	Page of this bulle- tin.	
NORTH DAKOTA—Continued.																		
WILLIAMS COUNTY.																		
Williston, 3 miles northeast of sec. 8, T. 154 N., R. 100 W., Williston mine, project of U. S. Reclamation Service (250 feet east of entrance, Middle bed, 84-inch cut).	5470	A	1	36.60	32.93	25.69	4.78	0.48					12.0	3,791	6,824		661	
			2		51.94	40.52	7.54	.76						5,979	10,762			
			3			43.83		.82							6,459	11,026		
3½ miles southeast of T. 154 N., R. 100 W., Black Diamond mine (main entry, Middle (6-foot) bed).	5469	A	1	38.92	32.74	24.32	4.02	.27					12.7	3,709	6,676		662	
			2		53.60	39.82	6.58	.44						6,072	10,930			
			3		57.37	42.63		.47						35.8	3,483	6,269		
Same (room 3 off west entry 1, south entry 1, Upper (79½-inch) bed).	7600	A	1	42.32	24.22	28.73	4.73	.35						6,038	10,868		662	
			2		41.99	49.81	8.20	.61						6,577	11,839			
			3		45.74	54.26		.66						33.1	3,603	6,485		
4 miles southeast of mine at mouth of Cedar Coulee (150 feet from opening, 6-foot cut).	1730	A	1	41.13	27.17	26.34	5.36	.72						6,120	11,016		662	
			2		46.15	44.74	9.11	1.22						6,733	12,119			
			3		50.77	49.23		1.34		6.93	41.87	.69	44.94	24.1	4,002	7,204		
Same (screened coal, owner's shipment).	1416	C	1	36.78	28.16	29.97	5.09	.48	6.93	41.87	.69	44.94	24.1	4,002	7,204		290	
			2		44.54	47.41	8.05	.76	4.49	66.23	1.09	19.38		6,330	11,394			
			3		48.44	51.56		.83	4.89	72.63	1.19	21.06		6,885	12,393			
			4						4.93	72.63	1.20	21.24		6,923	12,461			
Same (run of mine, Reclamation Service shipment).	2365	C	1	36.13	29.28	29.55	5.04	.59	6.60	42.00	.73	45.04	17.3	4,070	7,326		290	
			2		45.84	46.26	7.90	.92	4.05	65.77	1.14	20.22		6,374	11,473			
			3		49.77	50.23		1.00	4.40	71.59	1.24	21.97		6,918	12,452			
			4						4.45	72.12	1.25	22.18		6,966	12,539			
Same (run of mine).	4276	C	1	38.92	25.54	30.15	5.39	.48	6.89	39.34	.68	47.22	31.7	3,744	6,739		
			2		41.81	49.37	8.82	.79	4.21	64.41	1.11	20.66		6,130	11,034			
			3		45.86	54.14		.86	4.61	70.64	1.22	22.67		6,723	12,101			
OHIO.																		
BELMONT COUNTY.																		
Bellaire, Empire No. 1 mine, No. 8 bed (sample 1, room 3, off west entry 4, 60½-inch cut).	3987	A	1	3.32	40.80	49.11	6.77	3.55					1.2				332	
			2		42.20	50.80	7.00	3.67										13
			3		46.38	54.62		3.95										
Same (room 24, off entry 10, sample 2, 58½-inch cut).	3988	A	1	3.10	40.76	50.11	6.03	3.42					1.1	7,553	13,595		332	
			2		42.06	51.72	6.22	3.53						7,795	14,031			23
			3		44.85	55.15		3.76						8,312	14,962				663

Same (run of mine).....	4151	C	1	4.14	39.30	47.18	9.38	3.96	5.19	69.58	1.20	10.69	2.6	7.152	12.874	332	.....
			2	.....	41.45	49.21	9.79	4.13	4.93	72.39	1.25	7.31	.....	8.271	13.430	.....	.....
Same (run of mine).....	4178	C	3	.....	45.03	54.55	.....	4.58	5.47	80.46	1.39	8.10	.....	8.271	14.888	.....	.....
			2	2.97	37.61	49.45	9.97	3.65	5.14	70.21	1.39	8.90	1.3	7.185	12.935	332	.....
			2	.....	38.76	50.96	10.28	3.76	4.96	72.36	1.27	7.37	.....	7.405	13.329	.....	.....
Bethesda, 1 mile northwest of; Badgettown mine, Meigs Creek bed, 61½-inch cut.	4053	B	3	4.23	36.41	47.91	11.45	3.16	5.52	80.65	1.41	8.23	1.8	8.253	14.555	663	.....
			2	.....	38.02	50.02	11.96	3.20	.....	.....	.....	.....	.....	.....	.....	.....	.....
			2	.....	41.38	56.82	.....	3.75	.....	.....	.....	.....	.....	.....	.....	.....	.....
Flushing, 1 mile southeast of; Meigs Creek bed, 4-foot cut.	4054	B	3	4.63	33.84	52.50	9.03	2.18	.....	.....	.....	.....	1.7	.....	.....	664	.....
			2	.....	35.48	55.05	9.47	2.29	.....	.....	.....	.....	.....	.....	.....	.....	.....
2 miles southeast of; Black Oak mine, No. 8 bed (2,000 feet west of shaft, 48½-inch cut).	3985	A	3	3.96	38.09	48.91	9.04	2.55	.....	.....	.....	.....	1.7	.....	.....	664	.....
			2	.....	39.19	60.81	9.41	4.43	.....	.....	.....	.....	.....	.....	.....	.....	.....
Same (1,500 feet southwest of shaft, 59½-inch cut).	3986	A	3	4.13	39.65	50.94	9.41	4.43	.....	.....	.....	.....	.....	.....	.....	332	.....
			2	.....	43.77	56.23	7.96	4.15	.....	.....	.....	.....	.....	.....	.....	13	.....
Same (lump, over 1½-inch screen).....	4157	C	3	3.44	41.61	55.39	12.94	4.69	4.81	66.64	1.17	10.12	1.6	7.271	13.088	332	.....
			2	.....	40.91	50.79	8.30	4.30	4.59	69.01	1.22	7.31	.....	8.271	14.888	.....	.....
Neefs, Neff mine No. 1, No. 8 bed (room 12, off east entry 4, 2,000 feet southeast of drift mouth, 60-inch cut).	2095	A	3	3.99	38.77	49.17	8.07	3.49	5.17	79.69	1.40	8.44	1.8	8.163	14.693	.....	.....
			2	.....	40.38	51.22	8.40	3.64	5.30	.....	.....	.....	.....	8.163	14.693	.....	.....
Same (room 3, off west entry 2, 1,000 feet south- west of drift mouth, 68½-inch cut).	2096	A	3	4.06	39.45	50.05	6.44	3.97	.....	.....	.....	.....	1.8	7.582	13.648	13	.....
			2	.....	41.12	52.17	6.71	3.49	.....	.....	.....	.....	.....	8.277	14.899	290	.....
Same (run of mine).....	2392	C	3	4.08	44.08	55.92	6.44	3.35	.....	.....	.....	.....	.....	.....	.....	336	.....
			2	.....	41.12	52.17	6.71	3.49	.....	.....	.....	.....	.....	.....	.....	.....	.....
			2	5.31	36.72	49.45	8.52	3.33	5.39	70.71	1.12	10.93	3.9	7.135	12.843	290	.....
			3	.....	38.78	52.22	9.00	3.52	5.07	74.08	1.18	6.55	.....	7.535	13.563	.....	.....
			3	.....	42.61	57.39	.....	3.86	5.57	82.06	1.30	7.21	.....	8.280	14.904	.....	.....
			4	.....	.....	.....	.....	.....	5.79	85.36	1.36	7.49	.....	8.522	15.340	.....	.....
GUERNSEY COUNTY.																	
Danford, Forsythe mine, No. 7 bed (room 1, off east entry 16, 2,000 feet northwest of bottom of slope, 62½-inch cut).	2090	A	1	6.28	35.81	50.61	7.30	3.55	.....	.....	.....	.....	2.6	7.056	12.701	290	666
			2	.....	38.21	54.00	7.79	3.79	.....	.....	.....	.....	.....	7.529	13.552	13	.....
Same (room 22, off east entry 14, 3,700 feet northwest of bottom of slope, 70½-inch cut).	2091	A	3	5.80	36.89	50.73	6.58	4.11	.....	.....	.....	.....	2.2	8.164	14.695	290	666
			2	.....	39.16	53.85	6.99	2.78	.....	.....	.....	.....	.....	.....	.....	336	.....
			3	.....	42.10	57.90	.....	2.99	.....	.....	.....	.....	.....	.....	.....	.....	.....
Same (lump, over 1½-inch screen).....	2656	C	3	6.65	33.94	48.86	10.55	3.13	5.30	67.38	1.20	12.44	2.6	6.766	12.179	290	.....
			2	.....	36.36	52.34	11.30	3.35	4.88	72.18	1.29	7.00	.....	7.248	13.046	.....	.....
			3	.....	40.99	59.01	.....	3.78	5.51	81.37	1.45	7.89	.....	8.171	14.708	.....	.....
			4	.....	.....	.....	.....	.....	5.72	84.58	1.51	8.19	.....	8.405	15.129	.....	.....
HARRISON COUNTY.																	
Flushing (Belmont County), 2 miles north of; Meigs Creek bed, 55-inch cut.	4056	B	1	5.51	35.95	49.89	8.65	2.31	.....	.....	.....	.....	2.4	.....	.....	.....	666
			2	.....	38.05	52.80	9.15	2.44	.....	.....	.....	.....	.....	.....	.....	.....	.....
			3	.....	41.88	58.12	.....	2.69	.....	.....	.....	.....	.....	.....	.....	.....	.....

a Samples 1 and 2 from widely separated points in same mine.

GUERNEY COUNTY.

HARRISON COUNTY.

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.					Calorific value.		Reference.		
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.	British thermal units.	Bul- letin No.	Page of this bulle- tin.
OHIO—Continued.																	
HOCKING COUNTY.																	
Jobs, secs. 2 and 8, T. 13, R. 15, No. 2 mine, No. 6 (Middle Kittanning) bed, second break-through between rooms 3 and 4, off west entry 4, off south entry 3, 4,600 feet from drift mouth.	7712	(a)	1	9.72	32.44	53.41	4.43	0.54	5.70	69.50	1.25	18.58	5.5	6,804	12,247	667
			2	.....	35.93	59.16	4.91	.60	5.12	76.99	1.38	11.00	.....	7,537	13,567	.....
			3	37.78	62.2263	5.38	80.96	1.45	11.58	7,927	14,269	
Jackson, 5 miles west of; Decatur No. 1 mine, No. 1 bed (room 4, off left heading 3, 650 feet northwest of opening).	15188	A	1	13.60	31.75	50.42	4.23	.86	3.20	6,401	11,084	667
			2	.....	36.75	58.36	4.90	.99	.....	.....	.....	.....	.....	7,513	13,523	.....
			3	.....	38.64	61.36	.....	1.04	.....	.....	.....	.....	.....	7,900	14,220	.....
Same (room 10, off left entry 1, 600 feet northwest of opening).	15189	A	1	12.77	31.51	47.94	7.78	.97	2.80	6,259	11,266	667
			2	.....	36.12	54.96	8.92	1.11	.....	.....	.....	.....	.....	7,175	12,915	.....
			3	39.66	60.34	1.22	7,878	14,180	
JACKSON COUNTY.																	
Wellston, 9 miles southeast of; No. 10 mine, No. 4 bed (room 16, off right entry 4, 1,400 feet southwest of entrance, 33-foot cut).	1896	A	1	8.45	41.27	43.55	6.73	3.10	4.9	6,805	12,249	290	668
			2	.....	45.08	47.57	7.35	3.39	.....	.....	.....	.....	.....	7,433	13,379	336
			3	48.65	51.35	3.66	8,023	14,441		233
Same (room 17, off right entry 4, 1,400 feet northeast of entrance, 44½-inch cut).	1897	A	1	7.50	39.25	42.74	10.51	5.44	3.7	290	668
			2	.....	42.43	46.21	11.36	5.88	.....	.....	.....	.....	.....	.....	.....	.....
			3	.....	47.87	52.13	.....	6.63	.....	.....	.....	.....	.....	.....	.....	.....
Same (run of mine).	2071	C	1	7.71	38.32	42.02	11.95	4.61	5.41	62.49	1.11	14.43	4.9	6,397	11,515	290
			2	.....	41.52	45.53	12.95	4.99	4.93	67.71	1.20	8.22	.....	6,931	12,476	.....
			3	.....	47.70	52.30	.....	5.74	5.66	77.78	1.38	9.44	.....	7,962	14,332	.....
			4	.....	.....	.....	.....	.....	6.01	82.50	1.47	10.02	.....	8,310	14,958	.....
Same, No. 5 bed (room 5, off right entry 2, south side, 800 feet southwest of opening, 3-foot cut).	1898	A	1	9.38	36.74	46.26	7.62	4.08	5.6	6,610	11,898	290	668
			2	.....	40.54	51.05	8.41	4.50	.....	.....	.....	.....	.....	7,294	13,129	336
			3	41.26	53.79	9.34	4.91	7,964	14,355		233
Same (room 7, off right entry 4, north side, 800 feet northeast of opening, 31-inch cut).	1899	A	1	8.95	37.82	43.89	9.34	4.41	5.3	290	668
			2	.....	41.54	48.20	10.26	4.84	.....	.....	.....	.....	.....	.....	.....	.....
			3	.....	46.29	53.71	.....	5.39	.....	.....	.....	.....	.....	.....	.....	.....
Same (run of mine).	2109	C	1	9.01	35.85	43.80	11.34	4.02	5.38	62.79	1.20	15.27	3.6	6,386	11,495	290
			2	.....	39.40	48.14	12.46	4.42	4.81	69.01	1.32	7.98	.....	7,018	12,632	.....
			3	.....	45.01	54.99	.....	5.05	5.50	78.83	1.51	9.11	.....	8,018	14,432	.....
			4	.....	.....	.....	.....	.....	5.79	83.02	1.59	9.60	.....	8,323	14,981	.....
JEFFERSON COUNTY.																	
Bradley, Crow Hollow mine, No. 8 bed (room 9, off left entry 4, district 9, 3,000 feet northwest of tippie, 55½-inch cut).	1910	A	1	4.06	38.49	49.70	7.75	3.67	1.7	7,304	13,147	290	669
			2	.....	40.12	51.80	8.08	3.82	.....	.....	.....	.....	.....	7,613	13,703	336
			3	.....	43.65	56.35	.....	4.16	.....	.....	.....	.....	.....	8,282	14,908	13

	A	1911	660
Same (room 17, off main entry 2, district 2, 53½-inch cut).	1	4.20	290 336 233
Same (over ¾-inch screen).....	3	38.79	290
Brilliant, Pittsburgh bed	1	37.69	48
Georges Run, at mouth of; 1 mile west of Ohio River, Wagon's country bank, Pittsburgh bed, 5- foot (entire bed) cut.	2	38.09	
Island Creek, 1 mile west of Ohio River, country bank, Finley bed, 49½-inch cut.	3	37.45	
New Alexandria, 1 mile north of Scott's country bank, Pittsburgh bed.	2	38.82	
Rush Run, Rush Run No. 1 mine, Pittsburgh (or No. 8) bed (off left entry 1, 2,400 feet southeast of drift mouth, 51¼-inch cut).	4	42.87	
Same (room 17, off entry 3, 2,000 feet south of drift mouth, 50½-inch screen).....	1	34.87	
Dixie, Dixie mine, No. 6 bed (first pair of east entries, 1,000 feet southeast of drift mouth, 35½-inch cut).	2	36.81	
Same (first pair of west entries, 1,000 feet south- west of drift mouth, 36½-inch cut).	3	41.50	
Shawnee, Gosline & Barbour mine, No. 6 bed (main entry, 500 feet northeast of drift mouth, 59-inch cut).	4	34.48	
Same (seventh entry, 300 feet northeast of drift mouth, 58½-inch cut).	1	36.90	
Same (run of mine).....	2	35.45	
Same (run of mine).....	3	35.74	
Same (run of mine).....	4	33.66	
PERRY COUNTY.			
2083	C	38.09	
1577	B	38.82	
1576	B	42.87	
1574	B	37.94	
1575	B	41.10	
1944	A	34.69	
1945	A	35.57	
2062	C	37.14	
2119	A	38.58	
2120	A	45.27	
2559	C	43.15	
1900	A	34.07	
1901	A	41.95	
2144	C	33.66	

22 Sample taken according to standard method of Bureau of Mines but not by Bureau of Mines or United States Geological Survey.

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.				Ultimate.				Calorific value.		Reference.				
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile car- mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.	British thermal units.	Page of this bulle- tin.	
OHIO—Continued.																	
TUSCARAWAS COUNTY.																	
Mineral City, one-fourth mile south of; Huff mine, No. 5 bed (7,000 feet southeast of opening, 35-inch cut). Same (6,600 feet southeast of opening, 41½-inch cut).	3968	A	1	5.61	36.25	49.42	8.72	2.89	.....	.....	.....	.....	1.3	.....	.....	332	673
	2				38.40	52.36	9.24	3.03	.....	.....	.....	.....	.....	.....	.....	13	.....
	3				42.31	57.69			3.37	.....	.....	.....	.....	.....	.....	23	673
Same (lump, over 1½-inch bar screen).....	3969	A	1	4.46	39.89	47.11	8.54	3.73	.....	.....	.....	.....	1.1	7,136	12,845	23	.....
	2				41.75	49.31	8.94	3.90	.....	.....	.....	.....	.....	.....	.....	13	.....
	3				45.85	54.15		4.28	.....	.....	.....	.....	.....	.....	.....	23	.....
Same (lump, over 1½-inch bar screen).....	4059	C	1	4.49	40.55	47.43	7.53	2.93	5.08	69.64	1.29	12.93	2.3	7,109	12,958	332	.....
	2				42.46	49.66	7.88	3.07	5.42	72.91	1.35	9.37	1.35	7,537	13,567	.....	.....
	3				46.09	53.91		3.33	5.89	79.15	1.47	10.16	.....	8,182	14,728	.....	.....
VINTON COUNTY.																	
Clarion, Clarion mine, No. 4 bed (room 6, off east entry 4, 900 feet northeast of drift mouth, 43-inch cut). Same (butt entry 5, off main entry, 800 feet west of drift mouth, 40½-inch cut).	2208	A	1	6.79	40.01	45.54	7.66	3.34	.....	.....	.....	.....	2.8	6,952	12,514	290	673
	2				46.77	53.23	8.22	3.58	.....	.....	.....	.....	.....	.....	.....	336	.....
	3				47.38	53.23		6.16	2.77	.....	.....	.....	.....	.....	.....	13	.....
Same (lump, over 1½-inch screen).....	2209	A	1	7.38	41.60	44.86	6.65	2.99	.....	.....	.....	.....	3.4	8,126	14,027	290	673
	2				44.92	48.43		3.20	.....	.....	.....	.....	.....	.....	.....	336	.....
	3				48.12	51.88		3.20	.....	.....	.....	.....	.....	.....	.....	23	.....
Same (lump, over 1½-inch screen).....	2310	C	1	5.59	36.86	40.26	8.29	3.15	4.88	69.76	1.18	12.74	3.2	7,096	12,773	290	.....
	2				39.04	52.18	8.78	3.34	4.51	73.89	1.25	8.23	.....	7,516	13,529	.....	.....
	3				42.80	57.20		3.66	4.95	81.01	1.37	9.01	.....	8,240	14,832	.....	.....
Same (nut and slack, through 1½-inch screen)...	2311	C	1	8.10	36.87	43.10	11.93	3.35	5.15	63.54	1.42	9.98	5.6	6,427	15,241	290	.....
	2				40.12	46.90	12.98	3.65	5.31	69.14	1.15	8.46	.....	8,064	11,563	.....	.....
	3				46.11	53.89		4.19	5.31	79.46	1.33	9.71	.....	8,990	12,582	.....	.....
OKLAHOMA.																	
COAL COUNTY.																	
Coalgate, McAlester bed, slack, 4 tons.....	1596	C	1	8.03	31.28	41.40	19.29	3.20	.....	.....	.....	.....	3.5	.....	.....	261	.....
	2				34.01	45.02	20.97	3.48	.....	.....	.....	.....	.....	.....	.....	48	.....
	3				43.03	56.97		4.40	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lehigh, No. 7 mine, McAlester bed, slack and pea mixed, 20 tons.	1481	C	1	8.29	30.61	36.05	25.05	3.95	4.37	50.98	1.19	14.46	2.7	5,061	9,110	261	.....
	2				37.66	55.59	27.31	5.93	5.18	76.48	1.30	7.73	.....	5,519	9,934	48	.....
	3				45.92	54.08		5.93	5.18	76.48	1.79	10.62	.....	7,593	13,667	.....	.....

1	5.29	37.54	45.04	12.13	3.77							260	674
2		39.04	47.55	12.81	3.98							48	
3		45.46	54.14	9.31	4.07							260	674
1	6.50	39.71	48.32	9.36	3.93	1.29				1.9	6.570	11,842	
2		41.72	48.32		3.93	1.38					7,036	12,635	
3		41.72	53.67		4.36	1.53					7,815	14,067	
1	6.24	37.26	43.29	13.21	3.06	4.93	62.34	1.36	14.20	1.4	6.238	11,228	261
2		38.74	46.77	14.09	4.22	4.52	69.49	1.43	9.23		6,653	11,975	48
3		40.26	53.74		4.62	5.26	77.40	1.69	10.73		7,744	13,939	48
1	8.35	36.50	47.58	12.57	3.76					5.0			
2		38.73	47.53	13.72	4.14								
3		44.89	53.11		4.30								
1	7.07	36.81	43.68	10.81	3.64	5.13	64.38	1.41	14.57	3.0	6.371	11,468	260
2		39.18	49.10	11.66	3.92	4.68	69.28	1.55	8.91		6,856	12,341	
3		44.35	53.63		4.14	5.30	78.42	1.75	10.09		7,761	13,970	
HASKELL COUNTY.													
1	2.37	19.26	69.54	8.83	1.03	4.57	79.39	1.55	4.63		7,689	13,840	260
2		19.73	71.23	9.04	1.05	4.41	81.32	1.59	2.59		7,876	14,177	
3		21.69	78.31		1.15	4.85	89.40	1.75	2.85		8,659	15,586	
LATTIMER COUNTY.													
1	2.54	31.58	54.15	11.73	3.16					1.2			260
2		32.40	55.56	12.04	3.24								
3		36.84	51.16		3.68								
1	3.90	34.76	54.74	6.00	2.27					2.3			260
2		36.17	56.96	6.87	2.36								
3		38.84	61.16		2.35					.7			
1	2.81	36.54	55.45	5.20	.85								260
2		37.60	57.05	5.35	.87								
3		39.72	60.28		.92					1.5			
1	3.42	37.81	53.33	5.44	1.84								260
2		39.15	55.22	5.63	1.91								
3		41.49	58.51		2.02					1.9	7,615	13,707	260
1	2.96	35.97	55.95	5.12	1.09						7,847	14,125	677
2		37.07	57.65	5.28	1.08						8,284	14,911	
3		39.13	60.87		1.14								
LA FLORE COUNTY.													
1	5.09	15.79	72.52	6.60	.69					4.4			260
2		16.64	76.41	6.95	.73								
3		17.88	82.12		.78								
1	3.13	31.72	58.89	6.26	.86	5.50	78.07	1.81	7.50	2.4	7,700	14,022	260
2		32.74	60.80	6.46	.89	5.32	80.59	1.87	4.87		8,042	14,476	
3		35.00	65.00		.95	5.69	86.16	2.00	5.20		8,508	15,476	
1	4.03	28.97	63.45	3.55	1.05	6.93	63.45	3.70		3.0	7,951	14,312	260
2		30.19	66.11	3.70	1.09						8,285	14,913	
3		31.35	68.65		1.13						8,603	15,485	
1	5.11	13.65	73.21	8.03	1.18	4.65	78.37	1.00	6.17	4.5	7,630	13,662	332
2		14.72	74.28	8.46	1.24	4.30	82.59	1.69	1.72		7,999	14,398	
3		15.72	84.15		1.36	4.70	90.23	1.84	1.87		8,738	15,728	
Panama, run of mine (uninspected).....													

Lower Hartshorne bed.

6224	B	1	3.10	32.07	53.31	5.49	.89	5.13	73.52	1.89	13.08	1.1	7.497	13.495	260	680
Craig, 3 miles east of; boring No. 7 at depth of 441½ feet, 2-inch core through McAlester bed, 4-foot cut.		2	.....	35.10	61.23	5.67	.92	4.94	75.87	1.95	10.65		7.737	13.927		
6118	B	1	.....	35.09	64.91	.....	.98	5.24	80.43	2.07	11.28		8.202	14.764	260	680
3 miles south of; 1,150 feet north, 60° E. of SW. cor. sec. 17, tract 53, T. 3 N., R. 14 E., boring No. 6, McAlester bed, 3½-foot cut.		2	3.73	31.97	59.38	4.92	.72	5.21	74.82	1.66	12.67		7.398	13.316		
1715	B	1	.....	35.11	61.68	5.11	.75	4.98	77.72	1.72	9.72		7.685	13.833		
Dow, sec. 26, T. 5 N., R. 16 E., Bibby & Dow mine, McAlester bed, 35-inch cut.		2	4.07	35.11	55.89	3.93	.52	5.26	81.91	1.81	10.23		8.098	14.576	260	681
1079	A	1	.....	37.64	58.26	4.10	.51	.....	.....	.....	.....	1.8	8.084	13.574		
Edwards, No. 1 mine, McAlester bed (east air course 2, 48-inch cut).		2	3.27	37.64	60.74	.....	.56	.....	.....	.....	.....	.....	7.861	14.150	260	681
1080	A	1	.....	38.25	60.74	8.38	3.05	.....	.....	.....	.....	.....	8.197	14.755	260	681
Same (west air course 2, 46½-inch cut).....		2	2.97	40.43	48.22	8.64	3.14	.....	.....	.....	.....	.....	.....	.....	48	
1080	A	1	.....	45.61	54.39	.....	3.44	.....	.....	.....	.....	.....	6.995	12.591	260	681
Same (west air course 2, 46½-inch cut).....		2	2.93	39.02	47.75	10.30	3.73	.....	.....	.....	.....	.....	7.206	12.971	260	681
1274	C	1	.....	40.20	49.19	10.61	3.84	.....	.....	.....	.....	.....	8.062	14.512	261	.....
Same (run of mine, 25 tons).....		2	4.41	44.97	55.03	.....	4.30	.....	.....	.....	.....	.....	8.684	12.319		
1071	A	1	.....	47.25	51.14	11.68	3.63	4.92	67.37	1.48	11.46	1.2	6.844	12.915	261	.....
Hartshorne, 1 mile from; No. 8 mine, Lower Hartshorne bed (room 16, off west entry 7, 46-inch cut).		2	4.61	37.09	47.25	.....	3.81	4.62	70.62	1.55	7.72	1.76	8.123	14.621	260	681
1073	A	1	.....	43.92	53.08	6.40	1.38	5.23	79.96	1.70	8.74	.....	7.800	14.040	260	681
Same (room 14, off main east entry 7, 53½-inch cut).		2	1.46	39.04	53.08	.....	1.40	.....	.....	1.73	.....	.....	7.915	14.247	332	.....
1184	C	1	.....	39.62	53.89	6.49	1.50	.....	.....	1.85	.....	.....	8.465	15.237	260	681
Same (run of mine, 20 tons).....		2	1.30	38.90	52.15	7.65	1.58	.....	.....	.....	.....	.....	.....	.....	48	
3405	C	1	.....	42.71	57.29	7.75	1.73	.....	.....	.....	.....	.....	.....	.....	332	.....
Same (slack, through 4-inch screen).....		2	4.45	36.15	48.40	11.00	1.52	5.17	69.49	1.67	11.15	2.8	7.004	12.607	261	.....
3406	C	1	.....	37.83	50.66	11.51	1.80	4.00	72.73	1.75	7.52	.....	7.330	13.194	48	
Same (lump, over 1-inch screen).....		2	6.27	34.54	50.21	15.25	1.91	5.54	82.18	1.98	8.68	.....	8.284	14.911	.....
10053	A	1	.....	40.75	59.25	.....	2.25	5.64	85.69	2.01	8.68	4.9	8.392	15.103	332	.....
Same (east air course 8, 4,100 feet west of shaft, 48½-inch cut).		2	2.81	39.11	52.33	8.75	1.82	5.34	85.69	1.64	11.67	.....	8.576	11.837	.....
1737	B	1	.....	40.83	59.17	3.00	1.87	5.12	72.78	2.00	7.67	.....	8.278	14.900	332	.....
McAlester, No. 2 slope, Valley Mine, Lower Hartshorne bed.		2	3.53	36.34	55.22	4.91	1.52	5.66	79.49	1.92	9.50	1.8	7.714	13.885		681
1736	B	1	.....	37.67	57.24	5.09	1.58	5.46	79.29	1.99	6.39	.....	7.996	14.393		
McAlester No. 3 mine		2	4.59	32.64	60.31	4.76	1.66	5.75	83.54	2.10	6.95	2.1	8.425	15.165	260	682
1736	B	1	.....	34.00	61.01	4.99	1.37	.....	.....	.....	.....	.....	.....	.....
McAlester No. 3 mine		2	3.39	34.00	61.01	4.99	1.30	.....	.....	.....	.....	.....	.....	.....	260	682
10060	B	1	.....	35.79	64.21	4.90	.82	.....	.....	.....	.....	.....	7.638	13.748		
Pittsburg, McAlester-Edwards No. 1 mine, McAlester bed, left entry 5, off east entry, 1,300 feet N. 14° E. of slope mouth, 43-inch cut.		2	3.39	34.38	57.33	4.90	.85	.....	.....	.....	.....	.....	7.906	14.231	260	682
1745	B	1	.....	35.59	59.34	5.07	.90	.....	.....	.....	.....	.....	8.328	14.990		
Same (run of mine, 25 tons).....		2	4.54	31.49	62.51	8.56	3.23	4.91	70.09	1.60	11.61	1.9	7.031	12.710	260	682
1744	B	1	.....	36.29	59.40	4.40	3.38	4.62	73.43	1.68	7.92	.....	8.136	13.315		
Same (run of mine, 25 tons).....		2	4.86	33.16	56.84	8.97	3.72	5.08	80.66	1.85	8.69	1.6	8.136	14.627	260	683
1744	B	1	.....	35.59	54.43	5.12	1.49	.....	.....	.....	.....	.....	.....	.....
Same (run of mine, 25 tons).....		2	3.71	37.41	57.21	5.38	1.66	.....	.....	.....	.....	.....	.....	.....	260	683
1744	B	1	.....	39.54	60.46	.....	1.23	.....	.....	.....	.....	.....	.....	.....
Same (run of mine, 25 tons).....		2	5.14	34.02	55.23	5.61	1.38	.....	.....	.....	.....	.....	7.235	13.023	260	683
Savanna No. 1 slope.....		3	.....	35.86	58.23	5.91	1.30	.....	.....	.....	.....	.....	7.627	13.729		
.....		4	.....	38.11	61.89	.....	1.38	.....	.....	.....	.....	.....	8.106	14.591		

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.		Reference.				
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.	British thermal units.	Bul- letin No.	Page of this bulle- tin.	
OKLAHOMA—Continued.																		
PITTSBURG COUNTY—continued.																		
Savanna—Continued. 1 mile southeast of; in tract 69, NE, 4 SE, 4 sec. 16, T. 4 N., R. 14 E., bore hole No. 2. Lower Hartsorne bed, 3½-foot cut, from a 2-inch core.	5921	B	1	2.63	33.47	54.53	9.37	1.35	4.72	72.56	1.57	10.43	0.7	7,210	12,978	260	683	
			2	.....	34.37	56.01	9.62	1.39	4.55	74.52	1.61	8.31	.....	7,405	13,329		
			3	.....	38.03	61.97	.....	1.54	5.03	82.45	1.78	9.20	.....	8,193	14,747		
South McAlester, Great Western mine.....	1738	B	1	3.77	37.44	53.79	5.00	2.24	.....	.....	.....	.....	1.1	7,659	13,786	.....	683
			2	.....	38.91	55.89	5.20	2.33	.....	.....	.....	.....	.....	7,959	14,326	.....	
			3	.....	41.05	58.95	.....	2.46	.....	.....	.....	.....	.....	8,395	15,111	.....	
OREGON.																		
COOS COUNTY.																		
Beaver Hill, 1 mile southwest of; sec. 17, T. 27 S., R. 13 W., Beaver Hill or Newport bed (room 5, 700 feet northwest of mouth, 65-inch cut). Same (1,000 feet southeast main entrance, 72½-inch cut).	*9151	B	1	14.27	34.46	43.20	8.07	7.4	.....	.....	.....	.....	7.0	5,348	9,026	431	684
			2	.....	40.20	50.39	9.41	86	.....	.....	.....	.....	.....	6,239	11,230	.....	
			3	.....	44.38	55.62	.....	96	.....	.....	.....	.....	.....	6,887	12,397	.....	
Coquille, 1 mile north of; sec. 36, T. 27 S., R. 13 W., Pearl Bros. mine, 480 feet down main slope and 140 feet west inside entry, Newport bed, 103½-inch bed, 43½-inch cut.	*9152	B	1	16.10	31.10	39.63	13.17	87	5.53	51.07	1.19	28.23	8.1	5,017	9,931	431	684	
			2	.....	37.07	47.23	15.70	97	4.46	60.87	1.42	16.58	.....	5,980	10,764	.....	
			3	.....	43.97	56.03	.....	1.15	5.29	72.20	1.68	19.68	.....	7,094	12,769	.....	
Lampa, ½ mile west of; sec. 36, T. 28 S., R. 14 W., Happy Hoogan mine, Hoogan bed, wall of entry 50 feet in, 65½-inch bed, 47½-inch cut. 3 miles southeast of; sec. 4, T. 29 S., R. 13 W., Albee mine, Albee (52-inch) bed, 3-foot cut.	*9188	B	1	17.96	31.77	39.72	10.55	2.27	.....	.....	.....	.....	6.8	4,951	8,912	431	684
			2	.....	38.72	48.42	12.86	2.77	.....	.....	.....	.....	.....	6,035	10,853	.....	
			3	.....	44.45	55.57	.....	3.18	.....	.....	.....	.....	.....	6,926	12,467	.....	
Libby, 3 miles southwest of Marshfield; sec. 4, T. 26 S., R. 13 W., (third gangway west, 1,000 feet from mouth of mine, 74-foot bed, 5-foot 11-inch cut). Same (first gangway west, 900 feet from bottom of slope, below water level, 82-inch bed, 54-foot cut).	*9322	B	1	13.77	32.05	46.72	7.46	4.35	.....	.....	.....	.....	7.8	5,070	9,054	431	685
			2	.....	37.16	54.19	8.65	5.04	.....	.....	.....	.....	.....	5,833	10,499	.....	
			3	.....	40.08	59.32	.....	5.32	.....	.....	.....	.....	.....	6,385	11,493	.....	
Labby, 3 miles southwest of Marshfield; sec. 4, T. 26 S., R. 13 W., (third gangway west, 1,000 feet from mouth of mine, 74-foot bed, 5-foot 11-inch cut). Same (first gangway west, 900 feet from bottom of slope, below water level, 82-inch bed, 54-foot cut).	*9245	B	1	12.78	34.83	38.16	14.23	1.13	.....	.....	.....	.....	1.6	4,991	8,984	431	686
			2	.....	39.93	43.76	16.31	1.30	.....	.....	.....	.....	.....	5,722	10,300	.....	
			3	.....	47.71	52.29	.....	1.55	.....	.....	.....	.....	.....	6,837	12,307	.....	
Labby, 3 miles southwest of Marshfield; sec. 4, T. 26 S., R. 13 W., (third gangway west, 1,000 feet from mouth of mine, 74-foot bed, 5-foot 11-inch cut). Same (first gangway west, 900 feet from bottom of slope, below water level, 82-inch bed, 54-foot cut).	2461	B	1	20.84	34.04	36.75	8.37	1.17	.....	.....	.....	.....	11.3	5,749	10,318	431	686
			2	.....	43.00	46.43	10.57	1.48	.....	.....	.....	.....	.....	7,263	13,073	.....	
			3	.....	48.10	51.90	.....	1.65	.....	.....	.....	.....	.....	8,121	14,018	.....	
Labby, 3 miles southwest of Marshfield; sec. 4, T. 26 S., R. 13 W., (third gangway west, 1,000 feet from mouth of mine, 74-foot bed, 5-foot 11-inch cut). Same (first gangway west, 900 feet from bottom of slope, below water level, 82-inch bed, 54-foot cut).	2462	B	1	24.90	39.80	27.27	8.03	1.75	.....	.....	.....	.....	9.7	4,717	8,490	431	686
			2	.....	53.00	36.31	10.69	1.00	.....	.....	.....	.....	.....	6,281	11,406	.....	
			3	.....	59.33	40.57	.....	1.12	.....	.....	.....	.....	.....	7,033	12,659	.....	

	B	1	20.2	33.5	36.5	9.8	2.15	14.8	48.05	8,760	685
Marshfield, 1 mile southwest of; sec. 34, T. 25 S., R. 13 W., South Marshfield bed, 500 feet in, Newport (33-inch) bed, 49-inch cut.	B	2	...	42.0	45.7	12.3	3.10	...	6,095	10,980	431
1 mile west of; sec. 27, T. 25 S., R. 13 W., Waterworks mine, 700 feet in mine, Waterworks 46-inch bed, 37-inch cut.	B	2	20.28	34.12	32.24	13.36	1.02	15.3	4,704	8,575	687
4 miles southeast of; sec. 4, T. 26 S., R. 12 W., Coos Bay field, Lillian mine (not in operation) 620 feet in, Lillian 98-inch bed, 63-foot cut.	B	3	19.7	31.5	48.58	16.76	1.28	...	5,976	10,757	688
Maxwell, 2 miles southeast of; sec. 36, T. 26 S., R. 13 W., Smith & Power mine, 150 feet in, 54-inch bed, 37-inch cut.	B	2	18.96	28.50	35.44	13.8	1.00	13.6	4,665	8,400	688
North Bend, sec. 15, T. 25 S., R. 13 W., Wilcox mine (180 feet in, North Bend No. 1 bed, 16-inch cut).	B	2	35.17	43.73	44.73	17.2	1.20	8.6	5,810	10,400	688
Same (North Bend No. 2 bed, 200 feet in mine, 13-foot cut).	B	3	19.6	30.0	55.43	21.10	.67	...	4,316	7,069	688
3 miles northeast of; on Kentucky Slough, NW. 1/4 sec. 6, T. 25 S., R. 12 W., Gilberton mine, Steva 10-foot bed, 83-foot cut.	B	3	22.5	29.5	52.5	17.8	.85	14.8	6,730	12,150	688
Riverton, Eureka mine, Eureka 4 1/2-foot bed, 250 feet in, 4-foot cut.	B	2	23.19	31.50	45.5	22.1	6.75	...	5,200	9,470	689
Gage mine, Timon (49 1/2-inch) bed, 450 feet in, 31-inch cut.	B	3	16.03	32.77	35.21	12.8	8.65	17.1	6,750	12,150	689
Sec. 9, T. 28 S., R. 13 W., Old Rouse mine, Bunker (28-inch) bed, 100 feet in, 27-inch cut.	B	2	17.73	31.93	41.88	16.5	3.60	...	5,595	10,080	690
Sumner, 2 miles north of; sec. 20, T. 26 S., R. 12 W., Newcastle mine, 150 feet southeast of mouth, Newcastle 43-inch bed, 35-inch cut.	B	3	22.80	31.43	51.79	15.99	2.58	5.8	4,454	8,017	690
PENNSYLVANIA.											
ALLEGHENY COUNTY.											
Bruceton, Bertha mine, Pittsburgh bed (face entry 1, off butt entry 1, 5,000 feet from drift mouth, 60 1/2-inch cut).	A	1	3.57	31.03	56.84	8.46	1.37	1.8	7,708	13,874	693
Same (face entry 3, 5,000 feet from drift mouth, 60 1/2-inch cut).	A	2	4.08	37.44	52.56	10.28	1.51	...	8,001	14,402	693
Same (through 3-inch screen)...	C	3	2.61	34.92	62.02	7.70	1.45	2.2	8,483	15,269	693
Clinton, country bank, Pittsburgh (63-inch) bed, 62 1/2-inch cut.	B	4	3.35	35.55	47.55	6.17	1.26	694

Same (composite of Nos. 8992, 8993, and 8994).																																9035
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Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.				Ultimate.				Caloric value.		Reference.						
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Oxy- gen.	Air- dry- ing loss.		Calo- ries.	British thermal units.	Bul- letin No.	Page of this bul- letin.		
PENNSYLVANIA—Continued.																			
CAMBRIA COUNTY—continued.																			
Barnesboro, Delta mine—Continued. Same (left entry 18, off main, 6,500 feet from drift mouth, 52½-inch cut).	10287	A	1	3.03	22.01	68.40	6.56	1.48	.....	.....	.....	2.4	7,871	14,168	.....	.....	699		
			2	.....	24.35	70.54	6.76	1.53	.....	.....	.....	.....	.....	.....	8,117	14,611	.....	.....
			3	.....	22.02	68.20	5.92	1.64	.....	.....	.....	.....	.....	.....	.....	8,705	15,669	.....	.....
Same (pillar on right entry 2, off main, 2,000 feet from drift mouth, 39½-inch cut).	10263	A	1	3.86	22.90	70.94	6.16	1.39	.....	.....	.....	2.6	7,787	14,017	.....	.....	699		
			2	.....	24.40	73.60	6.46	1.48	.....	.....	.....	.....	.....	.....	.....	8,699	14,578	.....	.....
			3	.....	21.44	69.23	6.65	1.52	.....	.....	.....	.....	.....	.....	.....	8,630	15,534	.....	.....
Same (composite of 10262 and 10285-10287).....	10292	A	1	2.87	22.07	71.26	6.63	1.50	.....	.....	.....	2.2	7,876	14,177	.....	.....	699		
			2	.....	23.64	76.36	6.63	1.50	.....	.....	.....	.....	.....	.....	.....	8,108	14,595	.....	.....
			3	.....	23.64	76.36	11.23	5.15	88.81	1.32	3.05	.....	.....	.....	.....	8,685	15,634	.....	.....
Dale (near Johnstown), Dale mine, Upper Kittanning (C') bed, 32-inch cut.	3836	B	1	2.60	14.10	72.05	11.23	2.79	.....	.....	.....	2.0	.....	.....	.....	.....	700		
			2	.....	14.48	73.97	11.55	2.86	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
			3	.....	16.37	83.63	3.23	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
East Conemaugh, Conemaugh slope, Upper Freeport (Coke Yard) 43-inch bed.	3825	B	1	2.65	14.86	72.38	10.11	2.06	.....	.....	.....	2.0	.....	.....	.....	.....	700		
			2	.....	15.26	74.36	10.38	2.12	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
			3	.....	17.03	82.97	.....	2.37	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ehrenfeld, No. 3 mine, Lower Kittanning (Miller) bed (left entry 23, 2½ miles from drift mouth, 48- inch bed, 44½-inch cut).	2014	A	1	3.49	16.12	74.68	5.71	.95	.....	.....	.....	2.8	8,064	14,515	.....	.....	700		
			2	.....	16.70	77.38	5.92	.98	.....	.....	.....	.....	.....	.....	.....	8,356	15,041	.....	.....
			3	.....	17.75	82.25	.....	1.04	.....	.....	.....	.....	.....	.....	.....	8,881	15,986	.....	.....
Same (main entry, 2½ miles from drift mouth, 4-foot bed, 3½-foot cut).	2015	A	1	3.09	16.66	74.79	5.46	1.18	.....	.....	.....	2.2	.....	.....	.....	.....	700		
			2	.....	17.19	77.18	5.63	1.22	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
			3	.....	18.22	81.78	.....	1.29	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Same (run of mine).....	2152	C	1	3.51	16.82	73.04	6.63	.94	.....	.....	.....	2.9	7,933	14,279	.....	.....	.....
			2	.....	17.43	75.70	6.87	.97	.....	.....	.....	.....	.....	.....	.....	8,222	14,800	.....	.....
			3	.....	18.72	81.28	.....	1.05	.....	.....	.....	.....	.....	.....	.....	8,828	15,890	.....	.....
Emelgh, Victor No. 15 mine, face of heading, Lower Freeport, 45-inch bed, 44-inch cut.	7970	B	1	5.46	22.40	65.23	6.91	1.17	.....	.....	.....	4.7	8,896	16,013	.....	.....	701		
			2	.....	23.69	69.00	7.31	1.24	.....	.....	.....	.....	.....	.....	.....	8,585	13,653	.....	.....
			3	.....	25.56	74.44	.....	1.34	.....	.....	.....	.....	.....	.....	.....	8,023	14,441	.....	.....
Same (40½-inch cut).....	7968	A	1	3.14	21.92	67.53	7.41	.78	.....	.....	.....	2.30	8,656	15,581	.....	.....	701		
			2	.....	22.63	69.72	7.65	.81	.....	.....	.....	.....	.....	.....	.....	8,789	14,020	.....	.....
			3	.....	24.50	75.50	.....	.88	.....	.....	.....	.....	.....	.....	.....	8,041	14,474	.....	.....

Expedit (Twin Rocks), near Big Bend, Nonpareil No. 1 mine, Lower Kittanning (B) bed, right heading 4.	3809	B	1	2	3	3.45	18.82	71.18	6.55	2.01	3.0	316	702
No. 3 mine, Lower Kittanning (B) bed, right heading 4.	3810	B	1	2	3	3.07	20.91	73.73	6.78	2.23	2.5	316	702
Fallen Timber, Peerless No. 4 mine, Upper Freeport or E bed (right main entry, 1,250 feet from drift mouth, 268-inch cut).	10278	A	1	2	3	3.47	19.49	80.51	10.61	1.79	2.5	316	702
Same (left main entry, 1,200 feet from drift mouth, 273-inch cut).	10279	A	1	2	3	3.30	24.52	61.40	10.99	1.85	2.7	316	702
Same (composite of Nos. 10278 and 10279).	10298	A	1	2	3	3.34	28.54	71.46	9.11	1.70	2.6	316	702
Franklin, Franklin Slope No. 2, Lower Kittanning (B) bed 43-inch cut.	3840	B	1	2	3	2.70	25.64	65.25	9.85	1.80	1.8	316	703
Franklin mine No. 1, Upper Kittanning (C') bed, bed about 5 feet.	3841	B	1	2	3	1.67	17.44	82.56	10.67	3.45	1.0	447	703
Hastings, No. 20 mine, Lower Freeport (D) bed, in room 19 off left heading 29, several hundred feet from opening (sample 1, a 59-inch cut).	4028	A	1	2	3	2.86	18.83	70.32	10.85	3.95	2.3	332	703
Same in 24th right heading (sample 2, a 47-inch cut).	4029	A	1	2	3	2.74	23.31	69.70	6.99	1.46	2.3	332	703
Same (run of mine).	4169	C	1	2	3	4.25	25.06	74.94	7.23	1.57	2.3	332	703
Johnstown, Ferndale mine, Upper Freeport (E) bed, main bench, 32-foot cut.	3843	B	1	2	3	2.82	23.17	74.83	7.87	1.59	3.9	316	704
Greenhill mine, Lower Kittanning (B) bed, (31-foot cut).	3838	B	1	2	3	2.63	14.77	81.83	8.16	2.20	2.1	316	705
Litsinger mine (on Solomon's Run, southeast of Johnstown), Upper Kittanning (C') bed, (37-inch cut).	3844	B	1	2	3	3.51	17.12	83.88	8.36	2.31	2.3	316	705
Rolling Mill mine, Upper Kittanning (C') bed, (37-inch cut).	3833	B	1	2	3	1.94	19.09	80.10	10.66	2.08	1.2	447	705
Stony Creek prospect, near trolley bridge between Moxhorn and Ferndale, 10 feet from outcrop, Lower Freeport (D) bed (38-inch cut).	4012	B	1	2	3	4.73	18.78	79.27	9.22	1.09	4.0	316	705
Sunnyside No. 2 mine (at Moxhorn), Upper Kittanning (C') bed, bed about 4 feet.	3834	B	1	2	3	2.93	16.01	83.89	9.54	1.26	2.2	316	706
14 miles from; Sunnyside mine, Upper Kittanning or C' bed (main entry, 43-inch cut).	10249	A	1	2	3	5.00	14.04	70.86	9.30	2.33	5.1	447	707

a Samples 1 and 2 from widely separated points in same mine.

	B		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000
7907	B	Same (600 feet from pit mouth and 8 yards from main heading, 43-inch bed, 34-foot cut).	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	55																																																																																																																																																																																																																																																																																																																																																																																																																																																														

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Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.				Ultimate.				Calorific value.		Reference.					
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.		Air- dry- ing loss.	Calo- ries.	British thermal units.	Page of this bulle- tin.	
PENNSYLVANIA—Continued.																		
CAMBRIA COUNTY—Continued.																		
Windber, Eureka No. 37 mine—Continued.	8979	A	1	3.2	14.0	75.4	7.4	1.40						2.5			724	
Same (left entry 2, off northwest drift, 4,500 feet from drift mouth, 53½-inch cut).			2			14.0	78.3	7.7	1.45									447
			3			15.5	84.5			1.60								
Same (main north entry 2, 9,000 feet from drift mouth, 40½-inch cut).	8980	A	1	3.2	12.5	78.6	5.7	1.05						2.5			724	
			2			13.0	81.1	5.9	1.10									
			3			14.0	86.0			1.15								
Same (composite of 8975, 8978, 8979, 8980).....	9028	.....	1	3.3	12.5	77.9	6.33	1.04	4.46	81.65	1.27	5.25	2.4	7,965	14,340	724		
			2			12.5	81.0	6.54	1.07	4.24	84.39	1.31	2.45		8,235	14,820		
			3			13.5	86.5		1.14	4.54	90.30	1.40	2.62	1.6	8,810	15,860	724	
Same (3½-foot cut).....	3835	B	1	2.31	13.90	76.69	7.01	1.19	1.22								724	
			2			14.32	78.5	7.18	1.31									447
			3			15.43	84.57		.55									
Eureka No. 40 mine: Lower Kittanning (B) bed (pillar 6, right entry 1, off right entry 3, off main entry, 1,600 feet N. 45° E. from drift mouth, 38-inch cut).	8919	A	1	3.0	13.0	76.5	7.5	.60					2.5			725		
			2			12.0	79.3	7.7	.60								417	
			3			14.5	85.5		.65									
Same (pillar 20, right entry 6, off main entry, 3,000 feet N. 25° E. of drift mouth, 46-inch cut).	8917	A	1	2.6	14.0	74.8	8.6	3.00					1.9			725		
			2			14.5	76.7	8.8	3.10									
			3			16.0	84.0		3.40									
Same (left entry 6, off right entry 6, off main entry, 4,500 feet N. 45° E. from drift mouth, 46-inch cut).	8915	A	1	3.1	14.0	74.8	8.9	1.65					2.4			725		
			2			14.0	77.1	8.9	1.65									
			3			15.0	85.0		1.80									
Same (left entry 3, off right entry 7, off main entry, 4,900 feet N. 25° E. from drift mouth, 4-foot cut).	8914	A	1	2.8	13.0	77.1	7.1	1.35					2.1			725		
			2			13.5	79.2	7.3	1.40									
			3			14.5	85.5		1.50									
Same (main air course, 6,100 feet N. 15° E. from drift mouth, 46½-inch cut).	8916	A	1	2.9	14.0	76.9	6.2	.85					2.2			725		
			2			14.5	79.1	6.4	.85									
			3			15.5	84.5		.90									
Same (left entry 12, off main entry, 4,600 feet north of drift mouth, 46-inch cut).	8913	A	1	3.3	13.0	76.3	7.4	1.35					2.6			725		
			2			13.5	78.8	7.7	1.40									
			3			15.0	85.0		1.50									
Same (pillar 20, left entry 9, off main entry, 3,500 feet N. 8° W. from drift mouth, 3½-foot cut).	8918	A	1	2.3	14.5	76.5	6.7	.75					1.7			725		
			2			15.0	78.2	6.8	.75									
			3			16.0	84.0		.80									
Same (composite of Nos. 8913-8916).....	9031	.....	1	2.9	12.5	77.3	7.3	1.37	4.30	80.19	1.32	5.52	2.3	7,870	14,170	725		
			2			13.0	79.5	7.52	1.41	4.09	82.62	1.36	3.01		8,110	14,590		
			3			14.0	86.0		1.52	4.42	89.34	1.47	3.25		8,765	15,780		

9032	.....	1	2.8	14.0	75.4	7.79	1.38	4.38	80.29	1.25	4.01	2.0	7.850	14,130	447	725
Same (composite of Nos. 8917-8919).....																
8981	A	2	.....	14.5	77.5	8.01	1.42	4.19	82.60	1.29	2.49	.....	8,075	14,540	447	725
		1	3.3	13.0	84.6	7.3	1.54	4.55	89.79	1.40	2.72	2.7	8,780	15,800	447	725
		2	.....	13.5	79.0	7.5	2.05	.....	.....	.....	.....	.....	.....	.....	.....	.....
8982	A	2	.....	14.5	85.5	7.5	2.30	.....	.....	.....	.....	.....	.....	.....	.....	.....
		1	3.1	13.5	75.9	7.7	1.85	.....	.....	.....	.....	.....	.....	.....	.....	.....
		2	.....	14.0	78.3	7.7	2.00	.....	.....	.....	.....	.....	.....	.....	.....	.....
8983	A	3	.....	15.0	85.0	7.6	1.80	.....	.....	.....	.....	.....	.....	.....	.....	.....
		1	3.0	12.0	77.4	7.6	1.80	.....	.....	.....	.....	.....	.....	.....	.....	.....
		2	.....	12.5	73.7	7.8	1.85	.....	.....	.....	.....	.....	.....	.....	.....	.....
9029	.....	2	.....	13.5	86.5	7.58	1.05	.....	.....	.....	.....	.....	.....	.....	.....	.....
		1	3.3	12.5	76.7	7.58	1.97	4.34	79.69	1.37	5.05	2.4	7,810	14,000	447	725
		2	.....	12.5	79.7	7.84	2.01	4.11	82.42	1.42	2.17	.....	8,080	14,540	447	725
6271	A	3	.....	14.0	86.0	7.84	2.21	4.46	89.43	1.54	2.36	.....	8,765	15,780	447	727
		1	3.75	15.2	76.93	4.12	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		2	.....	16.2	79.93	4.28	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
6272	A	2	.....	16.50	83.50	4.28	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		1	3.19	14.95	77.65	4.21	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		2	.....	15.44	80.21	4.35	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
6273	A	3	.....	16.14	83.86	4.35	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		1	2.98	15.35	77.06	4.61	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		2	.....	15.82	79.43	4.75	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
8999	A	3	.....	16.61	83.39	4.75	1.17	.....	.....	.....	.....	.....	.....	.....	.....	.....
		1	3.7	13.5	78.6	4.2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		2	.....	14.0	81.6	4.4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
9000	A	2	.....	14.5	85.5	4.4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		1	3.1	13.0	79.0	4.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		2	.....	13.0	82.0	5.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
9001	A	2	.....	14.0	86.0	5.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		1	3.2	12.5	80.6	3.7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		2	.....	13.0	83.2	3.8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
9002	A	2	.....	13.5	86.5	3.8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		1	3.5	13.0	78.4	5.1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		2	.....	13.5	81.2	5.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
9051	.....	2	.....	14.0	86.0	5.3	1.70	.....	.....	.....	.....	.....	.....	.....	.....	.....
		1	3.4	12.5	79.4	4.66	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		2	.....	13.0	82.2	4.82	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
9003	A	3	.....	14.0	86.0	4.82	1.02	4.33	86.31	1.14	2.38	.....	8,315	15,020	447	728
		1	3.0	13.0	76.1	7.93	1.13	4.54	90.08	1.20	2.50	2.1	8,765	15,780	447	728
		2	.....	13.5	78.3	8.18	1.16	4.34	82.28	1.40	2.64	.....	7,820	14,080	447	728
CENTRE COUNTY.																
8481	B	3	.....	14.5	85.5	.....	1.26	4.73	89.61	1.52	2.88	.....	8,765	15,810	.....	.....
		1	2.08	21.46	69.87	6.59	1.99	4.92	80.58	1.29	4.63	1.5	7,990	14,274	.....	.....
		2	.....	21.91	71.36	6.73	2.03	4.79	82.29	1.32	2.84	.....	8,008	14,576	.....	.....
8487	B	3	.....	23.49	76.51	.....	2.18	5.14	88.23	1.42	3.03	.....	8,682	15,028	.....	.....
		1	1.9	22.0	66.3	9.8	1.95	4.66	78.05	1.14	4.40	1.2	7,645	13,760	.....	.....
		2	.....	22.5	67.5	10.0	1.99	4.54	79.58	1.16	2.73	.....	7,795	14,030	.....	.....
CLARION COUNTY.																
8487	B	3	.....	25.0	75.0	.....	2.21	5.05	88.45	1.29	3.00	.....	8,655	15,690	.....	.....
		1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
		2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.			Proximate.			Sulphur.	Ultimate.			Air-drying loss.	Calorific value.		Reference.
	Laboratory No.	Kind.	Con-dition.	Mois-ture.	Vola-tile mat-ter.	Fixed car-bon.	Ash.	Hy-dro-gen.	Car-bon.	Nitro-gen.	Oxy-gen.	Calo-ries.	British thermal units.	Page of this bulletin.
PENNSYLVANIA—Continued.														
CLARION COUNTY—Continued.														
Clarion, $\frac{1}{4}$ miles northwest of, near Clarion Junction, Cook prospect, 100 feet in, Clarion bed, 100 feet from mouth, 35 $\frac{1}{2}$ -inch cut.	4173	B	1	4.84	37.86	50.28	7.02	3.98						729
			2		39.79	52.83	7.38	4.18						316
			3		42.96	57.04		4.51						454
Fairmount City, $\frac{1}{4}$ miles northeast of; 1 mile north of Oak Ridge, No. 1 mine, 200 feet in, Lower Kittanning (40 $\frac{1}{2}$ -inch) bed, 39 $\frac{1}{2}$ -inch cut.	4170	B	1	2.73	34.77	52.20	10.3	3.66						729
			2		35.75	53.66	10.59	3.76						316
			3		39.98	60.02	4.21	4.21						454
2 miles northeast of; Fairmount No. 11 mine, 100 feet in, Upper Freeport bed, 49 $\frac{1}{2}$ -inch cut.	4171	B	1	5.56	30.72	57.14	6.97	1.10						730
			2		32.53	60.5	6.58	1.16						316
			3		34.97	65.03		1.25						454
New Bethlehem, 1 mile northwest of; Shenkle country bank, Upper Kittanning (48 $\frac{1}{2}$ -inch) bed.	4177	B	1	4.09	30.24	57.37	8.3	1.01						731
			2		31.53	59.82	8.65	1.05						316
			3		34.52	65.48		1.15						454
3 miles northeast of; northeast of Fairmount City, Fairmount No. 12 mine, 200 feet in, Lower Freeport bed.	4172	B	1	3.30	33.79	56.83	6.08	2.73						731
			2		34.94	58.77	6.29	2.82						316
			3		37.28	62.72		3.01						454
Rimersburg, $\frac{3}{4}$ miles northeast of; 4 miles southeast of Sligo, Mohney country bank, Upper Kittanning (2 $\frac{1}{2}$ -foot) bed, 29 $\frac{1}{2}$ -inch cut.	4176	B	1	5.89	30.46	48.66	14.99	1.60						732
			2		32.37	51.70	15.93	1.70						316
			3		38.50	61.50		2.02						454
Rimersburg, 1 mile south of; Acme mine, 800 feet in, Lower Kittanning bed, 43-inch cut.	4055	B	1	4.09	34.79	55.32	5.8	2.39						732
			2		36.27	57.68	6.05	2.49						316
			3		38.61	61.39		2.65						454
Sligo, $\frac{1}{4}$ mile west of; Sligo mine, 200 feet in, Brookville (35 $\frac{1}{2}$ -inch) bed, 34-inch cut.	3953	B	1	2.35	37.47	49.01	11.17	4.04						732
			2		38.37	50.19	11.44	4.15						316
			3		43.33	56.07	4.69							454
0.8 mile north of; Shorb pit, 350 feet in, Lower Kittanning bed.	3951	B	1	3.36	35.94	52.05	8.65	2.30						733
			2		37.19	53.86	8.95	2.38						316
			3		40.85	59.15		2.61						454
2 $\frac{1}{4}$ miles southeast of; Saylor country bank, Upper Freeport (46-inch) bed, 30-inch cut.	4111	B	1	3.98	33.7	54.50	7.82	2.18						733
			2		35.1	56.76	8.14	2.27						316
			3		38.21	61.79		2.47						454
Strattonville, 2 miles southeast of; Baldant No. 1 mine, Lower Kittanning (38 $\frac{1}{2}$ -inch) bed, 3-foot cut.	4116	B	1	2.87	34.51	54.31	8.31	1.36						733
			2		35.53	55.91	8.56	1.40						316
			3		38.86	61.14		1.53						454
CLEARFIELD COUNTY.														
Gassam, Gassam No. 1 mine, 8,000 feet in, off left entry 9, Lower Freeport or D bed, 3-foot cut.	8483	B	1	1.9	23.0	68.9	6.2	1.37						734
			2		23.5	70.1	6.4	1.40						316
			3		25.0	75.0		1.50						454

Graham, 1 mile northwest of; Middle Kittanning or C bed (Garon mine, 600 feet in, end of straight heading 4, 62-inch bed).	8484	B	1	2.7	20.0	67.1	10.2	2.00	4.81	76.92	1.26	4.81	1.9	7,500	13,610	737
Same (Hartley mine, 2,700 feet in, room at end of main heading, beyond entry 7, B (3-foot bed); coal, 3 feet).	8485	B	2	6.2	19.5	63.8	8.5	2.29	3.18	88.21	1.29	2.86	5.5	8,670	15,610	735
Grampian, 1 mile west of; Grampian No. 3 mine, 500 feet in, off main heading, Lower Freeport or D bed.	8482	B	3	4.1	22.5	77.5	6.1	3.74	4.02	80.07	1.02	1.78	3.2	7,905	14,330	735
La Jose, 13 miles west of; 41 miles northwest of Burnside Clearfield No. 1 mine, Upper Freeport bed (heading 5, 1,700 feet southwest of opening, 32-inch cut).	5227	A	1	3.27	24.61	62.74	9.38	2.13	4.96	81.83	1.16	3.66	2.1	8,680	15,600	735
Same (room 5 off heading 7, 1,700 feet west of opening, 27½-inch cut).	5223	A	3	28.17	71.83	2.82	2.82	2.47	5.29	87.43	1.24	3.91	2.1	7,571	13,628	735
Madera, Sylvania No. 1, 5,000 feet in, right entry 1, 5-foot 11-inch cut, Brookville or A bed.	8490	B	3	2.4	20.5	70.8	6.3	1.66	4.86	80.93	1.42	4.87	1.6	7,940	14,330	735
Moshannon, ½ mile north of; pillars of small mine, 500 feet in, close to big fault, Lower Freeport D, or Moshannon bed, 5-foot cut.	8488	B	2	2.9	20.5	72.0	4.6	.77	5.00	82.79	1.37	5.49	2.1	8,715	15,690	736
1 mile southeast of; Union No. 3 mine, 1,000 feet from mouth, left entry 2, off main (A 67½-inch) bed, 46-inch cut.	8480	B	3	2.76	20.74	67.57	8.93	.83	4.97	89.53	1.48	3.11	1.9	8,305	14,850	736
Phillipsburg (Center County), 3½ miles southwest of; Acene No. 2 mine, Lower Kittanning or B bed (left heading 3 off Hawk Run entry, ½ mile southwest of entrance, 46-inch cut).	10258	A	2	3.84	19.62	69.25	7.29	2.61	5.27	87.86	1.10	2.54	3.4	7,888	14,198	737
Same (last room off left entry 1 off Hawk Run entrance, 34-inch cut).	10259	A	3	2.76	19.70	69.81	7.73	2.24	5.00	88.20	1.34	4.72	2.3	7,799	14,038	737
Same (composite of Nos. 10258 and 10259).....	10264	A	3	3.37	19.85	69.25	7.53	2.39	4.84	78.90	1.27	5.07	2.9	7,748	13,646	737
Same (pillar in room 1, Paeker heading, about ½ mile northeast of entrance, 37-inch cut).	10260	A	3	2.26	20.55	69.89	7.39	1.50	5.02	88.55	1.42	2.33	1.7	8,096	15,652	737
Same (pillar in room 1 off left entry 3 off Luckey 2½ cut), about ½ mile northeast of entrance, 36-inch cut.	10261	A	3	3.12	20.17	69.17	7.54	1.97	5.00	88.20	1.34	4.72	2.1	8,081	14,940	737
Same (composite of Nos. 10260 and 10261).....	10265	A	3	2.80	20.21	69.60	7.39	1.67	5.00	88.20	1.34	4.72	2.1	7,822	15,673	737
Smoke run, ½ mile west of; Eureka No. 22 mine, 2,600 feet in, west entry 1 off main heading, D "lower split," 32-inch bed, 32-inch cut.	8489	B	3	3.2	21.0	69.3	6.5	.69	4.53	88.94	1.49	2.48	2.2	8,047	15,677	738
Woodland, 1 mile southwest of; Pane mine, right entry 1 off right heading 1, Upper Kittanning or C' (7-foot 7-inch) bed, 3-foot cut.	8486	B	3	3.2	23.5	65.8	7.5	3.77	4.98	77.08	1.24	4.92	2.6	8,650	15,970	738
			3	26.5	73.7	7.8	3.22	4.89	80.20	1.28	2.38	2.38		7,995	14,390	
			3	26.5	73.7	7.8	3.22	4.89	80.20	1.28	2.38	2.38		8,665	15,900	

Table of chemical analyses—Continued.

Sample.		Proximate.				Ultimate.				Calorific value.		Reference.				
Laboratory No.	Kind.	Con- dition.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Calo- rific.	British thermal units.	Bul- letin No.	Page of this bulle- tin.	
PENNSYLVANIA—Continued.																
FAYETTE COUNTY.																
4411	A	1	2.40	29.90	60.48	7.22	0.97							332	738	
		2		30.64	61.96	7.40	.99							336		
		3		33.09	66.91	7.37	1.07						7,773	13,991	332	738
4412	A	1	2.82	29.97	59.84	7.37	1.22							336		
		2		30.84	61.58	7.58	1.26						8,655	15,579	332	
		3		33.37	66.63		1.36	4.91	73.13	10.89	7.425	13,365				
4609	C	1	5.13	27.87	58.29	8.71	.86									
		2		29.38	61.44	9.18	.91	4.57	77.09	1.58	6.67	7,827	14,089			
		3		32.35	67.65		1.00	5.04	84.87	1.74	8.617	15,511				
5236	A	1	3.24	27.13	62.52	7.11	.95	5.24	78.00	1.23	7.47	7,733	13,919		738	
		2		28.04	64.61	7.35	.98	4.99	80.61	1.27	4.80	7,992	14,386			
		3		30.26	69.74		1.06	5.39	87.00	1.37	5.18	8,626	15,527			
7594	A	1	2.66	28.65	60.44	8.25	.71								738	
		2		29.43	62.09	8.48	.73						7,778	14,000		
		3		32.16	67.84		.80						8,499	15,298		
1968	A	1	4.08	32.44	53.98	9.50	1.64							290	740	
		2		33.82	56.28	9.90	1.71						7,371	13,268	336	
		3		37.54	62.46		1.90						7,684	13,831	13	740
1970	A	1	2.81	33.88	54.68	8.63	2.06							290		
		2		34.86	56.26	8.88	2.26						8,529	15,350	23	
		3		38.26	61.74		2.26									
2161	C	1	3.24	31.78	52.46	12.52	1.94	4.80	71.41	1.24	8.09	7,155	12,879	290		
		2		32.84	54.22	12.94	2.00	4.69	73.80	1.28	5.39	7,395	13,311			
		3		37.72	62.28		2.30	5.27	81.77	1.47	6.19	8,494	15,289			
2176	C	1	3.46	31.80	51.74	13.00	1.95							290		
		2		32.94	53.59	13.47	2.02									
		3		38.07	61.93		2.33									
GREENE COUNTY.																
1585	B	1	2.79	36.05	48.35	12.81	3.47							48	741	
		2		37.08	49.74	13.18	3.57									
		3		42.71	57.29		4.11									
1239	B	1	2.22	36.79	46.96	14.03	3.79							300	741	
		2		37.63	48.02	14.35	3.88							48		
		3		43.93	56.07		4.53									
HUNTINGDON COUNTY.																
10319	A	1	2.09	18.20	73.46	6.25	.81								742	
		2		18.59	75.03	6.38	.83						8,008	14,414		
		3		19.86	80.14		.89						8,179	14,722		
Jacobs, Barnett mine, Barnett, Lower Kittanning or B bed, level heading, about 600 feet from entrance, 35½-inch cut.																

Locality, bed, etc.

PENNSYLVANIA—Continued.

FAYETTE COUNTY.

Connellsville, 2 miles southwest of; Leisouring No. 1 mine, Pittsburgh bed (6,500 feet northwest of opening, 89-inch cut).

Same (9,000 feet northwest of opening, 91½-inch cut).

Same (run of mine).

Same (butt parallel entry 2, right entry 6, 7,500 feet north of opening, 98½-inch cut).

Same (2¼ miles south of opening, butt entry 6 off rib 7, 83-inch cut).

East Millsboro, Instead mine, Pittsburgh bed (butt entry 5, 900 feet from bottom of slope, 68-foot cut).

Same (butt entry 1, 1,300 feet north of bottom of slope, 81½-inch cut).

Same (run of mine, sample 1).

Same (run of mine, sample 2).

Durbin, Crabapple mine, Waynesburg (5½-foot) bed, 3-foot cut.

Ryerson station, country bank, Washington (51½-inch) bed, 33-inch (lower bench) cut.

HUNTINGDON COUNTY.

Jacobs, Barnett mine, Barnett, Lower Kittanning or B bed, level heading, about 600 feet from entrance, 35½-inch cut.

Jacobs mine, Fulton bed (last room off dip air course, about 1,000 feet from entrance, 60-inch cut).	10315	A	1	1.74	17.53	72.44	8.29	1.78
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Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.		Reference.				
	Lab-ora-tory No.	Kind.	Con-dition.	Mois-ture.	Vola-tile mat-ter.	Fixed car-bon.	Ash.	Sul-phur.	Hy-dro-gen.	Car-bon.	Nitro-gen.	Oxy-gen.	Air-dry-ing loss.		Calo-ries.	British thermal units.	Bul-letin No.	Page of this bulle-tin.
PENNYSYLVANIA—Continued.																		
INDIANA COUNTY—continued.																		
Homer City, Lucerne No. 1 mine—Continued. Same (right entry 11, 3,500 feet northeast of drift mouth, 68-inch cut).	10308	A	1	3.01	25.72	63.59	7.08	1.22	.....	.....	.....	.....	2.2	7,749	13,948	.....	746
			2	.....	26.52	65.56	7.92	1.26	.....	.....	.....	.....	.....	8,989	14,380	.....	746
			3	.....	28.80	71.20	7.72	1.37	.....	.....	.....	.....	.....	8,076	15,617	.....	746
	10309	A	1	3.15	26.12	63.01	7.97	2.32	.....	.....	.....	.....	2.5	7,685	13,833	.....	746
			2	.....	26.97	65.06	7.72	2.40	.....	.....	.....	.....	.....	7,935	14,283	.....	746
			3	.....	29.31	70.69	5.90	2.61	.....	.....	.....	.....	.....	8,022	15,620	.....	746
	10310	A	1	5.32	26.01	62.77	5.90	1.41	.....	.....	.....	.....	4.5	7,670	13,806	.....	746
			2	.....	27.47	66.30	6.23	1.49	.....	.....	.....	.....	.....	8,101	14,082	.....	746
			3	.....	29.29	70.71	6.23	1.59	.....	.....	.....	.....	.....	8,039	15,550	.....	746
	10311	A	1	3.18	26.56	61.97	8.29	2.18	.....	.....	.....	.....	2.5	7,658	13,784	.....	746
			2	.....	27.43	64.01	8.56	2.25	.....	.....	.....	.....	.....	7,909	14,236	.....	746
			3	.....	30.00	70.00	7.36	2.46	.....	.....	.....	.....	.....	8,049	15,568	.....	746
10312	A	1	4.11	26.24	62.29	7.36	1.89	.....	.....	.....	.....	.....	3.4	7,673	13,811	.....	746
		2	.....	27.37	64.95	7.08	1.97	.....	.....	.....	.....	.....	.....	8,002	14,404	.....	746
		3	.....	29.65	70.35	8.12	2.13	.....	.....	.....	.....	.....	.....	8,068	15,602	.....	746
10313	A	1	3.31	26.24	62.33	8.40	2.30	.....	5.08	77.06	1.37	6.15	2.7	7,650	13,770	.....	746
		2	.....	27.13	64.47	8.12	2.51	.....	4.87	79.70	1.42	3.31	.....	7,912	14,241	.....	746
		3	.....	29.62	70.38	8.19	1.88	.....	5.32	87.01	1.55	3.61	2.2	7,668	13,802	.....	747
10303	A	1	2.94	26.88	61.99	8.19	1.94	.....	.....	.....	.....	.....	.....	7,900	14,220	.....	747
		2	.....	27.69	63.87	8.44	2.12	.....	.....	.....	.....	.....	.....	8,028	15,530	.....	747
		3	.....	30.24	69.76	.....	2.12	.....	.....	.....	.....	.....	.....	7,430	13,374	.....	747
10305	A	1	6.44	24.80	60.97	7.79	1.86	.....	.....	.....	.....	.....	5.6	7,941	14,294	.....	747
		2	.....	26.50	65.17	8.33	2.17	.....	.....	.....	.....	.....	.....	8,653	15,593	.....	747
		3	.....	28.91	71.09	7.62	1.91	.....	.....	.....	.....	.....	4.7	7,512	13,522	.....	747
10304	A	1	5.46	26.70	61.68	8.06	2.02	.....	.....	.....	.....	.....	.....	7,946	14,303	.....	747
		2	.....	26.70	65.24	8.06	2.02	.....	.....	.....	.....	.....	.....	8,043	15,557	.....	747
		3	.....	29.04	70.96	.....	2.20	.....	.....	.....	.....	.....	.....	7,533	13,559	.....	747
10314	A	1	5.02	26.02	61.16	7.80	1.94	.....	.....	.....	.....	.....	4.2	7,931	14,276	.....	747
		2	.....	27.40	64.39	8.21	2.04	.....	.....	.....	.....	.....	.....	7,931	14,276	.....	747
		3	.....	29.85	70.15	8.84	1.86	.....	.....	.....	.....	.....	.....	8,040	15,552	.....	748
5223	A	1	4.26	26.55	60.35	8.84	1.86	.....	.....	.....	.....	.....	2.9	7,458	13,424	.....	748
		2	.....	27.73	63.04	9.23	1.94	.....	.....	.....	.....	.....	.....	7,790	14,022	.....	748
		3	.....	30.55	69.45	.....	2.14	.....	.....	.....	.....	.....	.....	8,582	15,448	.....	748
Rossiter, Canoe Township, Clearfield No. 3 mine, Upper Freeport bed (5,100 feet southwest of opening, 46½-inch cut).																		

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.		Reference.					
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile car- mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.		Calo- ries.	British thermal units.	Bul- letin No.	Page of this bulle- tin.	
PENNSYLVANIA—Continued.																			
SCHUYLKILL COUNTY—continued.																			
St. Nicholas St. Nicholas (No. 209) mine. Mammoth (middle split) bed, (600 feet west of opening, 134-foot cut).	5954	A	1	2.80	1.16	88.21	7.83	0.89	1.89	84.36	0.63	4.40	1.5	7,388	13,298	752			
Same (1,380 feet west of opening, 106-inch cut).	5955	A	2	.....	1.19	90.75	8.06	.92	1.63	86.78	.65	1.96	.....	7,601	13,682	752		
			3	.....	1.29	98.71	.....	1.00	1.77	94.39	.71	2.13	.....	8,268	14,882			
Same (1,380 feet west of opening, 106-inch cut).	5955	A	2	2.30	1.54	82.77	13.39	1.05	2.13	78.96	.66	3.81	1.5	6,957	12,523	752			
			3	.....	1.83	98.17	.....	1.07	1.91	80.82	.68	1.81	.....	7,121	12,818			
Tower City, 1 mile north of; West Brookside mine (300 feet north of opening, Lykens (No. 5) bed, 110-inch cut).	5953	A	1	3.33	3.27	84.28	9.12	.60	2.21	93.66	.79	2.10	2.6	8,253	14,855	752			
			2	3.38	87.19	9.43	.62	2.80	84.15	.82	2.18	7,417	13,351		752		
			3	3.73	96.2765	3.09	92.91	.91	2.41	7,672	13,810			752	
SOMERSET COUNTY.																			
Boswell, Orenda No. 2 mine. Upper Kittanning (C') bed (head of left flat 7, 3,400 feet in, 78½-inch bed, 59½-inch cut).	6261	A	1	4.68	15.64	73.55	6.13	.75	.....	.....	.....	.....	4.1	7,737	13,927	753		
			2	16.41	77.16	6.43	.79	8,117	14,610		753		
			3	.....	17.54	82.46	.....	.84	.....	.....	.....	.....	.....	8,675	15,615			
Same (head of right flat 8, 5,000 feet in, 73-inch bed, 62½-inch cut).	6262	A	1	3.89	15.51	73.56	7.04	.72	.....	.....	.....	.....	3.2	7,743	13,937	753		
			3	.....	16.14	76.53	7.33	.75	.....	.....	.....	.....	.....	8,057	14,503			
Same (500 feet from face of right 7, 6,200 feet in, 78½-inch bed, 67½-inch cut).	6263	A	1	3.42	17.42	82.58	.....	.81	.....	.....	.....	.....	2.6	8,694	15,649	753		
			2	15.49	74.77	6.32	.70	8,142	14,155		753		
			3	.....	16.04	77.42	6.54	.77	.....	.....	.....	.....	.....	8,712	15,682			
Elk Lick, 1½ miles northeast of; Merchants No. 3 mine, Pittsburgh bed (right 1, off right 3,330 feet northeast of mouth, 61-inch cut).	6304	A	1	3.04	19.59	70.33	7.04	.74	.....	.....	.....	.....	1.9	7,875	14,175	754		
			2	20.21	72.53	7.26	.82	8,121	14,618		754		
			3	.....	21.79	78.21	.....	.76	.....	.....	.....	.....	.....	8,586	14,763			
Same (pillar in room 12, 4,800 feet northeast of opening, right heading 5, 64-inch cut).	6305	A	1	2.61	19.77	69.94	7.68	1.65	.....	.....	.....	.....	1.6	7,757	15,763	754		
			2	20.30	71.81	7.89	1.69	8,097	14,195		754		
			3	.....	20.37	78.21	.....	1.83	.....	.....	.....	.....	.....	8,586	14,575			
Jenner, Jenner No. 2 mine, Upper Kittanning (C') bed (face heading 2, 5,400 feet southwest, 4½-inch cut).	6264	A	1	3.99	15.67	74.06	6.28	.67	.....	.....	.....	.....	3.2	7,852	14,134	754		
			2	16.32	77.14	6.54	.70	8,179	14,722		754		
			3	.....	17.46	82.54	.....	.75	.....	.....	.....	.....	.....	8,752	15,754			
Same (face heading 1, 4,080 feet southwest, 46½-inch cut).	6265	A	1	3.14	16.16	74.73	5.97	.62	.....	.....	.....	.....	2.4	7,915	14,247	754		
			2	.....	16.68	77.16	6.16	.64	.....	.....	.....	.....	.....	8,171	14,708			
Same (butt entry 2, off heading 10, 3,665 feet southwest, 47½-inch cut).	6266	A	1	4.23	17.77	82.23	6.29	.63	.....	.....	.....	.....	3.5	7,707	15,673	754		
			2	15.68	73.80	6.29	.63	8,829	14,092		754		
			3	.....	16.37	77.06	6.57	.66	.....	.....	.....	.....	.....	8,475	14,715			
			3	.....	17.52	82.48	.....	.71	.....	.....	.....	.....	.....	8,750	15,750			

Jerome, Jerome No. 1 mine, Upper Kittanning (C) bed, west entry 1, off main entry, 4,700 feet west, 71½-inch bed, 65½-inch cut.	A	1	2.78	10.14	73.63	7.45	77	2.0	7.784	14.011						
		2	2.80	10.30	74.30	7.66	79				2.2	7.852	14.413			
		3	2.82	10.46	74.97	7.87	81							2.9	7.920	14.815
		4	2.84	10.62	75.64	8.08	83										2.0	7.988	15.217
6259	1	2.86	10.78	76.31	8.29	85	2.0	8.056	15.619							
	2	2.88	10.94	76.98	8.50	87				2.0	8.124	16.021				
	3	2.90	11.10	77.65	8.71	89							2.0	8.192	16.423	
	4	2.92	11.26	78.32	8.92	91										2.0	8.260	16.825
6260	1	3.67	13.62	72.84	7.87	77	2.9	7.671	13.808							
	2	3.69	13.78	73.51	8.08	79				2.9	7.739	14.210				
	3	3.71	13.94	74.18	8.29	81							2.9	7.807	14.612	
	4	3.73	14.10	74.85	8.50	83										2.9	7.875	15.014
2016	1	2.63	10.22	70.94	10.21	2.05	1.8	7.614	13.705							
	2	2.65	10.38	71.61	10.42	2.07				1.8	7.682	14.107				
	3	2.67	10.54	72.28	10.63	2.09							1.8	7.750	14.509	
	4	2.69	10.70	72.95	10.84	2.11										1.8	7.818	14.911
2017	1	3.90	14.64	73.13	5.33	1.76	3.2	8.736	15.725							
	2	3.92	14.80	73.80	5.54	1.78				3.2	8.804	16.127				
	3	3.94	14.96	74.47	5.75	1.80							3.2	8.872	16.529	
	4	3.96	15.12	75.14	5.96	1.82										3.2	8.940	16.931
2199	1	3.09	17.29	68.29	11.33	2.04	2.6	7.458	13.424							
	2	3.11	17.45	68.96	11.54	2.06				2.6	7.526	13.826				
	3	3.13	17.61	69.63	11.75	2.08							2.6	7.594	14.228	
	4	3.15	17.77	70.30	11.96	2.10										2.6	7.662	14.630
306	1	2.18	17.78	72.03	8.01	7.0	2.6	7.458	13.424							
	2	2.20	17.94	72.70	8.22	7.2				2.6	7.526	13.826				
	3	2.22	18.10	73.37	8.43	7.4							2.6	7.594	14.228	
	4	2.24	18.26	74.04	8.64	7.6										2.6	7.662	14.630
305	1	2.10	18.00	72.14	7.76	.60	2.6	7.458	13.424							
	2	2.12	18.16	72.81	7.97	.62				2.6	7.526	13.826				
	3	2.14	18.32	73.48	8.18	.64							2.6	7.594	14.228	
	4	2.16	18.48	74.15	8.39	.66										2.6	7.662	14.630
307	1	2.23	19.57	80.03	8.05	.84	2.6	7.458	13.424							
	2	2.25	19.73	80.70	8.26	.86				2.6	7.526	13.826				
	3	2.27	19.89	81.37	8.47	.88							2.6	7.594	14.228	
	4	2.29	20.05	82.04	8.68	.90										2.6	7.662	14.630
10455	1	.92	19.53	80.47	8.00	.94	2.6	7.458	13.424							
	2	1.94	19.69	81.14	8.21	.96				2.6	7.526	13.826				
	3	1.96	19.85	81.81	8.42	.98							2.6	7.594	14.228	
	4	1.98	20.01	82.48	8.63	.100										2.6	7.662	14.630
MacDonaldton, Pen Mar No. 3 mine, B bed (face of south main heading 3, 6,500 feet southwest of drift mouth, 40-inch bed, 33½-inch cut).	1	2.57	15.99	72.12	9.32	1.70	2.6	7.458	13.424							
	2	2.59	16.15	72.79	9.53	1.72				2.6	7.526	13.826				
	3	2.61	16.31	73.46	9.74	1.74							2.6	7.594	14.228	
	4	2.63	16.47	74.13	9.95	1.76										2.6	7.662	14.630
313	1	2.99	16.14	72.01	8.86	1.60	2.6	7.458	13.424							
	2	3.01	16.30	72.68	9.07	1.62				2.6	7.526	13.826				
	3	3.03	16.46	73.35	9.28	1.64							2.6	7.594	14.228	
	4	3.05	16.62	74.02	9.49	1.66										2.6	7.662	14.630
314	1	2.50	16.47	71.51	9.52	1.65	2.6	7.458	13.424							
	2	2.52	16.63	72.18	9.73	1.67				2.6	7.526	13.826				
	3	2.54	16.79	72.85	9.94	1.69							2.6	7.594	14.228	
	4	2.56	16.95	73.52	10.15	1.71										2.6	7.662	14.630
315	1	2.08	16.17	70.68	11.07	2.21	2.6	7.458	13.424							
	2	2.10	16.33	71.35	11.28	2.23				2.6	7.526	13.826				
	3	2.12	16.49	72.02	11.49	2.25							2.6	7.594	14.228	
	4	2.14	16.65	72.69	11.70	2.27										2.6	7.662	14.630
316	1	2.15	17.16	70.34	10.35	2.30	2.6	7.458	13.424							
	2	2.17	17.32	71.01	10.56	2.32				2.6	7.526	13.826				
	3	2.19	17.48	71.68	10.77	2.34							2.6	7.594	14.228	
	4	2.21	17.64	72.35	10.98	2.36										2.6	7.662	14.630
317	1	2.24	15.93	71.81	10.02	2.11	2.6	7.458	13.424							
	2	2.26	16.09	72.48	10.23	2.13				2.6	7.526	13.826				
	3	2.28	16.25	73.15	10.44	2.15							2.6	7.594	14.228	
	4	2.30	16.41	73.82	10.65	2.17										2.6	7.662	14.630
10454	1	1.03	16.03	72.57	10.37	2.22	2.6	7.458	13.424							
	2	1.05	16.19	73.24	10.58	2.24				2.6	7.526	13.826				
	3	1.07	16.35	73.91	10.79	2.26							2.6	7.594	14.228	
	4	1.09	16.51	74.58	11.00	2.28										2.6	7.662	14.630

8839	1	3.5	12.6	77.6	6.43	1.31	4.61	81.17	1.21	5.27	2.8	7,860.7	14,133	763
Same (composite of Nos. 8873-8876).....	2		13.0	80.3	6.66	1.36	4.37	84.79	1.25	2.24		8,140	14,650	
8840	1	2.5	12.5	78.9	6.17	1.06	4.96	90.13	1.34	4.80	1.8	8,730	15,090	763
Same (composite of Nos. 8877-8879)	2		12.5	81.2	6.33	1.09	4.19	84.84	1.37	2.68		8,985	14,380	
8964	3	2.6	13.5	80.3		1.16	4.47	90.04	1.46	2.87	2.0	8,400	13,740	764
Eureka No. 35-C' mine, Upper Kit(tanning (C') bed (right entry 2 off main entry, 53-inch cut).	A		14.0	73.5	7.6	1.09						8,740	13,740	
8965	2		14.0	78.5	7.8	1.63								764
Same (main entry, 53½-inch cut).....	3	2.8	13.5	74.5	7.8	1.46					2.2			
8965	1	2.8	13.5	73.9	8.0	1.30								764
Same (left air course 2 off main entry, 49½-inch cut).	2		13.5	78.5	8.0	1.30								
8966	3	2.9	13.0	85.0		1.65					2.3			766
Same (left air course 2 off main entry, 49½-inch cut).	1	2.9	12.0	77.3	7.8	1.25								
9025	2		12.5	79.5	8.0	1.30								764
Same (composite of Nos. 8964-8966).....	3	3.0	13.5	86.5		1.40								
1½ miles west of: Eureka No. 30 mine, Lower Kit-tanning (B) bed (pillar, right entry 1 off right entry 10, 9,500 feet from drift mouth, 39½-inch cut).	1	3.0	12.0	77.4	7.55	1.50	4.32	79.84	1.17	5.62	2.2	7,820	14,070	764
8943	2		12.5	79.7	7.78	1.55	4.11	82.31	1.21	3.04		8,000	14,510	
Same (pillar, left entry 10 off main entry, 9,500 feet from drift mouth, 37¾-inch cut).	3	2.1	13.5	86.5		1.08	4.46	89.26	1.31	3.29		8,740	15,730	764
8944	1	2.1	17.5	73.3	7.1	1.75					1.5	7,940	14,290	
Same (pillar, left entry 10 off main entry, 9,500 feet from drift mouth, 37¾-inch cut).	2		18.0	74.8	7.2	1.80					1.80	8,110	14,600	
8945	3		19.0	81.0		1.95						8,740	15,730	764
Same (right entry 13 off main entry 1, 10,000 feet from drift mouth, 34½-inch cut).	1	3.9	14.0	76.6	5.5	1.60					3.0	7,910	14,240	764
8946	2		14.5	79.7	5.8	1.65						8,235	14,820	
Same (room 11, left entry 11 off main entry 2, 10,800 feet from drift mouth, 36½-inch cut).	3	2.5	15.0	85.0		1.75					1.7	8,740	15,730	764
8947	1	3.1	18.0	74.1	7.7	2.25								
Same (left entry 15 off main entry 2, 11,500 feet from drift mouth, 33¾-inch cut).	2		19.5	80.5		2.50					2.8			
8948	3	3.5	13.5	76.1	6.9	1.85								764
Same (left entry 15 off main entry 1, 10,500 feet from drift mouth, 43¾-inch cut).	1	3.1	14.0	78.8	7.2	1.90					2.9			
9019	2		15.5	84.5		2.05								
Same (composite of Nos. 8945-8948).....	3	3.4	13.0	78.2	5.7	1.55					2.4			
2 miles south of: Eureka No. 33 mine, Lower Kit-tanning (B) bed (pillar, main entry, 6,000 feet from drift mouth, 40½-inch cut).	1	3.1	13.5	80.6	5.9	1.60					2.0			764
8954	2		14.5	85.5		1.70								
Same (pillar, right entry 12, 4,600 feet from drift mouth, 40½-inch cut).	3	3.4	17.0	70.8	8.8	1.70					2.7			764
8955	1	3.1	18.0	72.9	9.1	1.75								
Same (pillar, main entry 2 off right entry 9, 4,500 feet from drift mouth, 37-inch cut).	2		19.5	80.5		1.95								765
8956	3	3.1	15.0	74.8	7.07	1.85					2.4	7,830	14,100	764
Same (pillar, right entry 12, 4,600 feet from drift mouth, 40½-inch cut).	1	3.1	15.5	77.2	7.30	1.91	4.37	83.37	1.36	1.69		8,080	14,550	
8955	2		17.0	83.0		2.06	4.71	89.93	1.47	1.83	2.6	8,720	15,690	765
Same (pillar, right entry 12, 4,600 feet from drift mouth, 40½-inch cut).	3	3.3	13.5	74.8	6.4	1.60								
8956	1	3.3	16.0	77.4	6.6	1.05								
Same (pillar, right entry 12, 4,600 feet from drift mouth, 40½-inch cut).	2		17.0	83.0		1.05					3.0			765
8956	3	3.5	13.0	77.6	5.9	.65								
Same (pillar, main entry 2 off right entry 9, 4,500 feet from drift mouth, 37-inch cut).	1	3.5	13.5	80.4	6.1	.65								
8956	2		14.5	85.5		.70								
Same (pillar, main entry 2 off right entry 9, 4,500 feet from drift mouth, 37-inch cut).	3	3.6	14.5	76.7	5.2	.85					3.0			765
8956	1	3.6	15.0	79.6	5.4	.90								
Same (pillar, main entry 2 off right entry 9, 4,500 feet from drift mouth, 37-inch cut).	2		16.0	84.0		.90								
8956	3		16.0	84.0		.90								

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.		Reference.			
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.		Calo- ries.	British thermal units.	Page of this bulle- tin.
PENNSYLVANIA—Continued. SOMERSET COUNTY—continued.																	
	8957	A	1	3.6	14.0	77.9	4.5	0.60						2.8			765
			2		14.5	80.9	4.6										
	8958	A	1		15.5	84.5											765
			2	8.2	12.5	74.5	4.8							7.3			
			3		14.0	80.8	5.2										
			1		14.0	80.8	5.2										
			2	4.6	13.5	76.7	5.18										
	9023		3		14.0	80.6	5.43										
			1		15.0	85.0											
	8959	A	1	3.1	14.0	75.3	7.9										765
			2		14.0	78.1	7.6										
8960	A	1		15.5	84.5												
		2	3.2	13.5	77.3	6.0										766	
		3		14.0	79.8	6.2											
8961	A	1		14.5	85.5												
		2	3.4	14.5	75.0	7.1										766	
		3		15.0	77.6	7.4											
8962	A	1		16.0	84.0												
		2	2.7	15.0	76.1	6.2										766	
		3		15.5	83.5	6.4											
8963	A	1		16.5	83.5												
		2	3.5	14.0	75.2	7.3										766	
		3		14.5	78.0	7.5											
9024		1		16.0	84.0												
		2	3.2	14.0	75.9	6.90										766	
		3		14.5	78.4	7.12											
6274	A	1		15.5	84.5												
		2	2.83	15.66	75.00	6.51										767	
6275	A	1		16.12	77.18	6.70											
		2	17.28	82.72													
		3	3.31	14.81	76.23	5.65										767	
		1		15.32	78.84	5.84											
		2		16.27	83.73												
1½ miles northeast of; Eureka No. 36 mine, Lower Kittanning (B) bed (room 1, off right entry 21, 8,500 feet north of drift mouth, 43-inch cut). Same (right flank 14, 9,000 feet northeast of drift mouth, 42½-inch cut).																	

6276	A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	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Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.			Proximate.			Ash.	Ultimate.				Calorific value.		Reference.			
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.		Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.		Calo- ries.	British thermal units.	Bul- letin No.
PENNSYLVANIA—Continued.																	
SOMERSET COUNTY— continued.																	
Windber—Continued. 4 miles southwest of; on Stony Creek, above Border station on Baltimore & Ohio R. R., Somerset and Cambria mine, Lower Kittanning (B or Miller) 77-inch bed.	3837	B	1 2 3	1.78	15.19 15.46 17.18	73.25 74.58 82.82	9.78 9.96	4.50 4.58 5.09	4.16 4.03 4.48	77.10 78.50 87.18	1.41 1.44 1.59	3.05 1.49 1.66	1.1	7,612 7,750 8,607	13,702 13,950 15,493	316	769
SULLIVAN COUNTY.																	
Bernice, Connell mine, chamber 69 off A entry, B (6- foot) bed.	9665	A	1 2 3	3.38	8.47 8.77 9.95	76.65 79.33 90.05	11.50 11.90.....	.63 .65	3.58 3.31 3.76	78.43 81.18 92.15	1.00 1.04 1.18	4.86 1.92 2.17	2.6	7,309 7,565 8,587	13,156 13,617 15,457	.....	770
Same, chamber 4, off AA entry, B (upper) 3-foot 1-inch bed.	9654	A	1 2 3	3.35	8.35 8.64 10.30	72.75 75.27 89.70	15.55 16.09.....	.53 .55	3.54 3.28 3.91	74.03 76.60 91.29	.97 1.00 1.19	5.38 2.48 2.95	2.8	6,943 7,184 8,562	12,497 12,931 15,412	.....	770
3 mile east of; Randall and Shaad mine, Dasher entry, 3d breast face, B (lower), 2-foot 3½-inch bed.	9652	A	1 2 3	3.40	9.34 9.67 11.00	75.58 78.24 89.00	11.68 12.09.....	.81 .84	3.64 3.37 3.83	77.85 80.59 91.67	.95 .98 1.11	5.07 2.13 2.43	2.9	7,289 7,545 8,582	13,120 13,581 15,448	.....	771
1½ miles east of; O'Boyle and Fay mine, face of main entry, 120 feet from opening, 3-foot 5½-inch bed.	9653	A	1 2 3	3.66	9.51 9.57 11.02	76.90 78.08 88.98	13.09 13.59	1.57 1.89	3.58 3.29 3.62	75.56 78.43 90.76	1.04 1.08 1.20	5.20 2.02 2.35	3.0	7,131 7,402 8,566	12,836 13,324 15,419	.....	771
Same (Johnson entry, off entry 3, 6-foot 8- inch bed).	9656	A	1 2 3	3.47	9.28 10.67 10.87	76.10 78.84 89.13	11.15 11.55.....	.78 .81	3.69 3.82 3.78	77.60 80.39 90.89	1.00 1.04 1.18	5.85 2.87 3.23	3.0	7,342 7,606 8,599	13,216 13,691 15,478	.....	771
Lopez, 1 mile northwest of; Northern mine, east gang- way, left heading 1, B (7-foot ½-inch) bed.	9655	A	1 2 3	3.16	8.59 8.87 9.61	78.08 80.63 90.09	10.17 10.50.....	.67 .69	3.47 3.22 3.57	79.49 82.08 91.71	1.10 1.14 1.27	5.10 2.37 2.65	2.6	7,431 7,673 8,573	13,376 13,811 15,431	.....	771
Same, north gangway, left chamber 1, B (4-foot 11-inch) bed.	9664	A	1 2 3	3.58	9.44 9.48 10.82	75.36 78.16 89.18	11.92 12.36.....	.60 .62	3.57 3.29 3.75	78.04 80.94 92.35	1.07 1.15	4.90 1.78 2.04	3.0	7,262 7,531 8,593	13,072 13,556 15,467	.....	771
WASHINGTON COUNTY.																	
Acheson, Acheson mine, Pittsburgh bed (1,100 feet west of opening, 63½-inch cut).	3441	A	1 2 3	2.60	32.46 33.33 35.37	59.31 60.89 64.63	5.63 5.78	1.19 1.22	1.4	7,880 8,060 8,587	14,184 14,562 15,457	332 336 13	771

[illegible]

1032	B	1	1.90	30.20	53.70	8.20	1.52																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.		Reference.					
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Volu- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.		Calo- ries.	British thermal units.			
PENNSYLVANIA—Continued.																			
WESTMORELAND COUNTY—continued.																			
Ligonier, 3 miles north of; Ligonier mine, Pittsburgh bed (800 feet from drift mouth, room 3 off butt entry 4, 7½-inch cut).	1994	A	1	3.30	23.03	62.49	11.18	1.70	.....	.....	.....	.....	.....	2.4	7,432	13,378	782	
			2	.....	23.82	64.62	11.56	1.85	.....	.....	.....	.....	.....	.....	.....	7,685	13,833	336
			3	26.93	73.07	2.09	8,690	15,642	13
Same (950 feet from drift mouth, room 3 off right entry 6, 60-inch cut).	1995	A	1	2.78	22.91	61.58	12.73	1.88	.....	.....	.....	.....	.....	1.9	.....	.....	.....	782
			2	.....	23.57	63.34	13.09	1.93	.....	.....	.....	.....	.....	.....	.....	.....	.....	332
			3	.....	27.12	72.88	.....	2.22	.....	.....	.....	.....	.....	.....	.....	.....	.....	233
Same (run of mine).....	2154	C	1	4.09	20.62	62.82	12.47	2.08	4.73	72.78	1.50	6.44	3.2	7,307	13,153	290			
			2	.....	21.60	65.50	13.00	2.17	4.46	75.88	1.56	2.93	.....	.....	.....	7,618	13,712	.....
			3	.....	24.71	75.29	.....	2.49	5.13	87.23	1.80	3.35	.....	.....	.....	8,757	15,763	.....
			4	8,923	16,061	783
Seward, 1½ miles east of; Seward mine, Lower Kittanning (B) bed (1,850 feet south of opening, 42½-inch cut).	4349	A	1	2.80	17.92	71.32	7.96	2.29	.....	.....	.....	.....	.....	2.3	.....	.....	.....	783
			2	.....	18.44	73.37	8.10	2.36	.....	.....	.....	.....	.....	.....	.....	.....	.....	336
			3	.....	20.08	79.92	.....	2.57	.....	.....	.....	.....	.....	.....	.....	.....	.....	293
Same (1,050 feet southwest of opening, 41½-inch cut).	4350	A	1	2.48	17.87	70.41	9.24	3.03	.....	.....	.....	.....	.....	2.0	7,679	13,822	332	
			2	18.32	72.21	9.47	3.11	7,874	14,173
			3	20.34	79.76	3.44	8,099	15,658
Same (run of mine).....	4517	C	1	4.00	15.89	69.57	10.54	2.85	4.79	75.41	1.12	5.29	3.6	7,415	13,347	.....		
			2	.....	16.55	72.47	10.98	2.97	4.53	78.55	1.17	1.80	.....	.....	.....	7,724	13,903	.....
			3	.....	18.59	81.41	.....	3.34	5.09	88.24	1.31	2.02	.....	.....	.....	8,676	15,617	.....
RHODE ISLAND.																			
NEWPORT COUNTY.																			
Portsmouth, Portsmouth mine, at Marshall's landing (heading, 1,150 feet south of south shaft, in 900-foot gallery, 500 feet down, vertically).	9328	B	1	16.80	2.30	64.43	16.47	.59	2.12	62.63	.27	17.92	14.0	5,128	9,230	784			
			2	.....	2.76	77.44	19.80	.71	.30	75.27	.32	3.60	.....	.....	.....	6,163	11,093	.....
			3	.....	3.44	96.56	.....	.89	.37	93.85	.41	4.48	.....	.....	.....	7,684	13,831	.....
Same (south slope, on 800-foot level, 1,200 feet south of main slope, "Middle," 6-foot bed).	9329	B	1	13.26	2.65	65.30	18.88	.30	1.88	64.23	.22	14.49	9.6	5,174	9,313	784			
			2	.....	2.95	75.28	21.77	.35	.47	74.05	.25	3.11	.....	.....	.....	5,965	10,737	.....
			3	.....	3.78	96.22	.....	.45	.60	94.66	.32	3.97	.....	.....	.....	7,624	13,723	.....
Same (69 feet south of north shaft, 150 feet down vertically, 27½-inch bed, weathered).	9330	B	1	23.68	3.01	42.54	30.77	.03	3.15	42.36	.10	23.59	23.1	3,320	5,976	784			
			2	.....	3.94	55.74	40.32	.04	.68	55.50	.13	3.33	.....	.....	.....	4,350	7,830	.....
			3	.....	6.60	93.40	.....	.05	1.14	93.00	.22	5.59	.....	.....	.....	7,289	13,120	.....
Same (900 feet north of north shaft at heading in gallery, 23-inch bed).	9331	B	1	22.92	2.78	58.37	15.93	.05	2.84	58.46	.18	22.49	21.0	4,738	8,528	784			
			2	.....	3.61	75.72	20.67	.13	.38	75.85	.23	2.74	.....	.....	.....	6,146	11,063	.....
			3	.....	4.55	95.45	.....	.16	.48	95.62	.29	3.45	.....	.....	.....	7,748	13,946	.....

9335	B	1	15.9	2.5	49.8	31.8	12	2.29	47.88	.18	17.63	14.8	4,055	7,300	784
		2	.....	3.0	59.3	37.7	.14	1.75	56.90	.21	4.30	.....	4,820	8,075	
9336	B	3	.....	3.5	46.0	33.9	.15	2.11	51.39	.33	6.80	.....	7,740	13,980	784
		2	16.6	4.0	53.4	40.6	.18	.82	54.57	.12	18.20	15.5	5,635	6,645	
9337	B	3	.....	7.0	93.9	.....	.09	.84	91.88	.20	7.08	.....	7,840	13,200	784
		2	14.1	4.0	61.0	20.0	.09	1.93	62.53	.08	15.48	13.8	7,945	8,895	
		2	.....	5.5	72.3	23.2	.10	.43	72.78	.09	3.40	.....	10,360	17,755	
9338	B	2	.....	6.0	94.0	.....	.12	.56	94.80	.12	4.39	.....	7,495	13,490	784
		2	13.9	2.5	63.2	20.4	1.34	1.84	62.09	0.19	14.14	11.4	5,025	9,040	
		2	.....	2.5	33.8	23.7	1.56	.33	72.13	0.22	2.06	.....	5,835	10,510	
		3	.....	3.5	96.5	.....	2.04	.43	94.53	0.29	2.71	.....	7,650	13,770	
3216	C	1	2.41	4.92	73.61	19.06	.07	.90	75.10	.17	4.70	2.0	6,100	10,996	332
		2	.....	5.04	75.43	19.53	.09	.65	76.95	.17	2.63	.....	6,260	11,208	
		3	.....	6.26	93.74	.....	.07	.80	95.72	.22	3.27	.....	7,779	14,002	
7769	A	4	.....	4.03	95.97	32.36	.13	.....	.....	.....	.....	.....	7,784	14,011	785
		1	9.71	2.60	61.98	25.71	.08	.....	.....	.....	.....	9.1	4,901	8,822	
		2	.....	3.46	62.49	33.89	.20	.....	.....	.....	.....	.....	5,428	9,770	
7770	A	2	4.51	3.62	62.49	33.89	.12	.....	.....	.....	.....	4.0	7,588	13,658	785
		2	.....	5.48	94.52	.....	.83	.94	78.65	.11	5.71	4.1	4,894	8,809	
7771	A	3	4.54	3.01	78.69	13.76	.87	.46	82.39	.12	1.75	.....	7,403	13,325	785
		2	.....	3.15	82.44	14.41	1.02	.54	96.26	.14	2.04	.....	6,165	11,097	
		3	.....	3.68	96.32	.....	.11	.....	.....	.....	.....	.....	6,468	11,024	
7772	A	3	.....	1.69	73.09	17.92	.12	.....	.....	.....	.....	0.8	7,546	13,583	785
		2	7.30	1.82	78.85	19.33	.15	.12	.....	.....	.....	.....	5,758	10,364	
		3	.....	2.26	97.74	.....	.....	.....	.....	.....	.....	.....	6,211	11,180	
													7,699	13,858	
7840	B	1	30.45	22.97	34.43	12.15	.39	.....	.....	.....	.....	19.7	3,858	6,944	786
		2	.....	33.03	49.50	17.47	.56	.....	.....	.....	.....	.....	5,517	9,985	
		3	.....	40.02	59.98	.....	.68	.....	.....	.....	.....	.....	6,721	12,098	
2001	B	1	40.25	25.21	27.17	7.37	.84	.....	.....	.....	.....	32.3	.....	.....	785
		2	.....	42.19	45.48	12.33	.64	.....	.....	.....	.....	.....	.....	.....	285
		3	.....	48.12	51.88	.....	.96	.....	.....	.....	.....	.....	.....	.....
2956	A	1	3.25	35.63	54.51	6.61	.85	.....	.....	.....	.....	1.9	7,508	13,514	786
		2	.....	36.83	56.34	6.83	.88	.....	.....	.....	.....	.....	7,760	13,968	336
		3	.....	39.53	60.47	.....	.94	.....	.....	.....	.....	.....	8,329	14,992	13
2957	A	1	3.12	35.15	55.52	6.21	.86	.....	.....	.....	.....	1.7	.....	.....	786
		2	.....	36.28	57.31	6.41	.89	.....	.....	.....	.....	.....	.....	.....	332
		3	.....	38.77	61.23	.....	.95	.....	.....	.....	.....	.....	.....	.....	23

PROVIDENCE COUNTY.

Cranston (near Providence), Cranston mine, pit in outcrop (run of mine).

SOUTH DAKOTA.

CORSON COUNTY.

Morristown, 12 miles southeast of; NW $\frac{1}{4}$ sec. 19, T. 21 N., R. 21 E., surface outcrop, 35-inch cut.

HARDING COUNTY.

Cave Hills, sec. 19, T. 22 N., R. 6 E., outcrop on Riley ranch, 9-foot bed, lower bench, 5-foot cut.

TENNESSEE.

ANDERSON COUNTY.

Olliver Springs (Roane County), 3 miles north of; Wind-rock No. 1 mine, Dean bed (4,300 feet north-east of drift mouth, 534-inch cut).

Same (2,000 feet south of drift mouth, 564-inch cut).

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.				Ultimate.				Calorific value.		Reference.				
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.		Calo- ries.	British thermal units.		
TENNESSEE—Continued.																	
ANDERSON COUNTY—continued.																	
Oliver Springs (Roane County), Windrock No. 1 mine—Continued.	3058	C	1	0.39	32.32	51.76	9.53	0.98	5.41	70.16	1.56	12.36	4.7	6,988	12,578	332	
Same (run of mine).....			2	.....	34.53	55.29	10.18	1.05	5.02	73.95	1.67	7.13	.....	7,467	13,441	
.....			3	.....	38.44	61.56	.....	1.17	5.09	83.44	1.86	7.94	.....	8,311	14,960	
.....			4	.....	.....	.....	.....	.....	5.66	84.43	1.88	8.03	.....	8,383	15,089	
CAMPBELL COUNTY.																	
Gatlin, Regal mine, Regal Block bed (500 feet south of drift mouth, 61-inch cut).	2929	A	1	4.25	35.31	56.31	4.13	.93	.....	.....	.....	.....	1.8	7,592	13,666	332
.....	2930	A	2	.....	36.88	58.81	4.31	.97	.....	.....	.....	.....	.....	7,929	14,272	336
.....			3	.....	38.54	61.46	.....	1.01	.....	.....	.....	.....	.....	8,286	14,915	13
Same (1,050 feet south of drift mouth, 52½-inch cut)			1	4.42	35.35	57.53	2.70	.80	1.9	332
.....			2	36.98	60.20	2.82	.84	233
.....	3040	C	3	.....	38.05	61.95	.....	.86	.....	.....	.....	.....	.....	.....	.....	787
Same (run of mine).....			1	5.38	34.54	53.03	7.05	.99	5.50	72.41	1.72	12.33	3.2	7,249	13,048	332	
.....			2	.....	36.50	56.05	7.45	1.05	5.18	76.52	1.82	7.98	.....	7,660	13,788	.....
.....			3	.....	39.44	60.56	.....	1.13	5.66	82.68	1.96	8.63	.....	8,278	14,990	.....
2½ miles northeast of; Westborne mine, Log Moun- tain bed (687 feet northeast of opening, 33- foot cut).	2931	A	1	3.61	37.29	55.69	3.41	.83	.....	.....	.....	.....	.....	8,347	15,025	787
.....	2932	A	2	.....	38.69	57.77	3.54	.86	.....	.....	.....	.....	.....	8,500	14,130	332
.....			3	40.11	59.8989	336
Same (675 feet south of opening, 43-inch cut)...			1	3.19	38.08	56.35	2.38	.88	8,443	15,197	13
.....			2	39.34	58.20	2.46	.91	233
.....	3129	C	3	.....	40.33	59.67	.....	.93	.....	.....	.....	.....	.....	.....	.....	332
Same (run of mine).....			1	5.09	35.79	52.31	6.81	.98	5.39	73.54	1.75	11.53	3.2	7,386	13,295	.....
.....			2	.....	37.71	55.11	7.18	1.03	5.08	77.48	1.84	7.39	.....	7,782	14,008	.....
.....			3	.....	40.63	59.37	.....	1.11	5.47	83.48	1.99	7.95	.....	8,384	15,091	.....
Lafollette, Rex No. 2 mine, Rex bed (cross heading, 4,200 feet northwest, 41½-inch cut).	7498	A	1	3.03	34.01	58.05	4.91	.....	5.53	84.41	2.01	8.05	.....	8,453	15,215	788
.....	7497	A	2	.....	35.07	59.87	5.06	.....	5.19	75.78	1.62	10.73	1.3	7,099	13,858	6
.....			3	.....	36.94	63.06	.....	1.93	5.00	78.14	1.67	8.30	.....	7,939	14,290	.....
Same (4,000 feet west, right cross heading 6, 46½- inch cut).			1	2.92	32.04	58.23	6.81	1.14	5.19	74.95	1.62	10.29	1.5	7,508	13,514	788	
.....			2	.....	33.00	59.99	7.01	1.17	5.02	77.22	1.67	7.92	.....	7,734	13,921	.....
.....			3	.....	35.49	64.51	.....	1.26	5.40	83.03	1.80	8.51	.....	8,317	14,971	.....
.....		

CLABORNE COUNTY.									
Fork Ridge, No. 2 mine, Mingo or Ralston bed (4,000 feet northeast of slope, 48½-inch cut).	2907	A	1	3.71	35.61	55.94	4.74	1.28	789
Same (4,400 feet east of slope, 48½-inch cut).....	2908	A	2	3.66	36.98	58.10	4.92	1.33	332
Same (run of mine).....	3016	C	3	3.66	38.89	61.11	6.83	1.40	790
			2	3.66	34.58	54.93	6.83	1.03	13
			3	3.66	35.89	57.02	7.09	1.11	23
			4	3.66	38.63	61.37	11.15	1.58	332
			1	4.81	32.91	51.13	11.15	1.58	790
			2	4.81	34.57	53.72	11.71	1.66	332
			3	4.81	39.15	60.85	11.71	1.88	790
			4	4.81	39.15	60.85	11.71	1.88	13
CUMBERLAND COUNTY.									
Ozone, 2½ miles south of; slack, through 1½-inch bar screen.	3471	C	1	3.53	20.75	47.85	27.87	90	790
			2	3.53	21.51	49.60	28.89	93	332
			3	3.53	30.25	69.75	1.31	5.45	790
Waldensia, 3 miles northwest of; Yellow Creek No. 1 mine Lower Sewanee (?) bed (200 feet west of drift mouth, 34-foot cut).	2977	A	1	3.80	30.72	60.98	4.50	1.78	332
Same (350 feet northeast of drift mouth, 4½-foot cut).	2978	A	2	3.00	31.93	63.39	4.68	1.81	790
			3	3.00	33.50	66.50	6.16	1.68	13
			4	3.00	31.83	61.82	6.35	1.19	332
			1	3.89	27.61	54.07	14.43	1.78	790
			2	3.89	28.73	56.26	15.01	1.81	332
			3	3.89	33.80	66.20	15.01	1.85	790
			4	3.89	33.80	66.20	15.01	1.85	13
FENTRESS COUNTY.									
Wildor, Fentress mine, Wilder bed (2,000 feet north of drift mouth, 54½-inch cut).	2979	A	1	3.46	34.73	52.73	9.08	2.42	790
			2	3.46	35.97	54.62	9.41	2.51	332
			3	3.46	39.71	60.29	10.13	2.77	790
Same (1,500 feet east of drift mouth, 46½-inch cut).	2980	A	1	3.04	36.37	50.46	10.13	3.84	332
			2	3.04	37.1	52.04	10.45	3.96	790
			3	3.04	41.89	58.11	12.85	4.42	332
Same (screened over ½-inch by 1-inch shaker screen).	3133	C	1	3.03	34.91	49.21	12.85	3.26	790
			2	3.03	36.00	50.75	13.25	3.36	332
			3	3.03	41.50	58.50	13.25	3.88	790
			4	3.03	41.50	58.50	13.25	3.88	13
Wildor mine, Wilder bed, room 1 on entry 3, 45½-inch cut.	1619	A	1	2.51	35.98	49.82	11.69	2.47	790
			2	2.51	36.90	51.11	11.99	2.53	332
			3	2.51	41.93	58.07	11.99	2.87	790
GRUNDY COUNTY.									
Coalmont, B mine, Sewanee or Middle Sewanee bed (1,900 feet north of drift mouth, 3-foot cut).	2995	A	1	3.44	29.24	58.11	9.21	1.73	790
			2	3.44	30.28	60.18	9.54	1.76	332
			3	3.44	33.47	66.53	8.17	1.84	790
Same (2,000 feet south of drift mouth, 31-foot cut).	2996	A	1	3.77	28.60	59.46	8.17	1.68	332
			2	3.77	29.72	61.79	8.49	1.71	790
			3	3.77	32.48	67.52	14.09	1.78	332
Same (lump, over ½-inch screen, 20 tons).....	3113	C	1	3.92	27.34	54.76	14.09	1.94	790
			2	3.92	28.33	57.00	14.66	1.98	332
			3	3.92	33.21	66.79	14.66	1.15	790
			4	3.92	33.21	66.79	14.66	1.15	13

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.						Ultimate.				Calorific value.		Reference.			
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.		British thermal units.	Bul- letin No.	Page of this bulle- tin.
TEXAS—Continued.																		
ROBERTSON COUNTY.																		
Calvert, 6 miles west of; Calvert mine (room 4 off entry 1 south, 250 feet south of opening, Upper, 8½-inch bed, 77-inch cut).	7403	A	1	34.33	25.94	30.93	8.80	0.95						29.3	4,008	7,214	14	797
			2		39.50	47.10	13.40	1.45							6,103	10,985		
			3		45.61	54.39			1.67						7,047	12,685		
Same (room 8 off east entry north, 550 feet northeast of opening, 83½-inch bed, 78½-inch cut).	7404	A	1	33.50	26.06	30.38	10.06	0.97						27.9				797
			2		38.19	45.68	15.13	1.46										
			3		46.18	53.82		1.72										
WOOD COUNTY.																		
Hoyt, No. 1 mine, south entry 2, 500 feet from mouth, 8½-foot cut).	1241	A	1	28.86	35.96	27.26	7.92	.50			0.80			5.8	4,442	7,996	261	797
			2		50.55	38.32	11.13	.79			1.12				6,244	11,239	13	
			3		56.88	43.12		.57						5.9		12,647	261	797
No. 3 mine (foot of air shaft, 94-inch cut).....	1243	A	1	31.34	41.18	18.98	8.50	.57									43	
			2		59.98	27.64	12.38	.83									201	
			3		68.46	31.54		.95									261	
Same (run of mine).....	1597	C	1	33.71	29.25	28.76	7.28	.53	6.79	42.52	.79	42.09	25.8	4,082	7,348	201	13	
			2		44.12	44.89	10.99	.80	4.60	64.14	1.19	18.28		6,158	11,084	48		
			3		49.57	50.43		.90	5.17	72.06	1.33	20.54		6,918	12,452			
Same (screened).....	1610	C	1	33.98	31.01	27.33	7.68	.56						25.8				
			2		46.97	41.40	11.63	.84										
			3		53.15	46.85		.95										
Same (1,100 feet southeast of slope, 6½-foot cut).	2635	A	1	36.80	28.86	28.09	6.25	.93					29.9	3,945	7,101	332	797	
			2		45.66	44.45	9.89	.84						6,242	11,236			
			3		50.07	49.33		.93						6,927	12,469	332	797	
Same (400 feet northeast of slope, 8½-foot cut)...	2636	A	1	34.87	29.80	27.69	7.64	.50					28.4					
			2		45.75	42.52	11.73	.77										
			3		51.83	48.17		.87										
Same (run of mine).....	2717	C	1	33.85	27.50	31.35	7.30	.51	6.68	43.12	.71	41.68	26.7	4,165	7,497	332		
			2		41.57	47.39	11.04	.77	4.41	65.18	1.07	17.53		6,296	11,333			
			3		46.73	53.27		.87	4.96	73.27	1.21	19.69		7,077	12,739			
		4							5.01	73.92	1.22	19.85		7,120	12,816			
UTAH.																		
CARBON COUNTY.																		
Castlegate, sec. 2, T. 13 S., R. 9 E., Castlegate bed (east part of mine, 10-foot cut).	2097	B	1	6.13	40.07	45.45	8.35	.56					3.5	6,787	12,217	285	798	
			2		42.69	48.41	8.90	.60						7,230	13,014	316		
			3		46.86	53.14		.66						7,936	14,285			

Sample taken by mine operator according to official method of Bureau of Mines.	2098	B	1	4.72	39.13	48.45	7.70	49	1.3	7.045	12.081	798
Same (west part of mine, 6-foot cut).....	2		2	.....	41.07	50.85	8.03	51	.....	7.304	13.309	285
10 miles east of, sec. 3, T. 13 S., R. 11 E., in Coal Creek Canyon, Gibson prospect, 5-foot cut.	2193	B	3	.....	44.68	55.32	.....	55	.....	8.044	14.479	316
	1		1	5.42	36.32	52.16	6.10	54	1.0	6.789	12.220	285
	2		2	.....	38.40	55.15	6.45	57	.....	7.178	12.920	285
10½ miles east of, sec. 10, T. 13 S., R. 11 E., in Coal Creek Canyon, Bean prospect, 98-inch bed, 97-inch cut.	2188	B	3	4.09	41.05	58.95	5.26	61	1.1	7.673	13.811	285
	2		2	.....	39.68	54.84	5.48	50	.....	.....	.....	285
Clear Creek, sec. 33, T. 13 S., R. 7 E., Clear Creek mine, 3,000 feet in, Clear Creek bed, 13½-foot cut.	2542	B	2	7.02	41.88	58.02	5.29	57	3.1	.....	.....	285
	1		1	.....	45.05	49.26	5.69	61	.....	.....	.....	285
Kenilworth, 4 miles east of Helper, Aberdeen mine, Book Cliffs bed (3 places—main slope, 1,880 feet north; right slope, 1,880 feet north; fifth left slope, 1,560 feet north by 132 feet west, 22-foot bed) ^a .	10046	B	3	4.47	40.79	49.98	4.76	32	1.25	7.212	12.982	285
	2		2	.....	42.70	52.32	4.98	33	1.31	7.550	13.590	285
	3		3	.....	44.94	55.05	.....	35	1.38	7.946	14.303	285
Same (all parts of mine) ^a	10044	B	1	3.20	64.31	28.34	4.15	35	1.4	.....	.....	285
	2		2	.....	66.44	29.27	4.29	36	.....	.....	.....	285
Four Points mine, Lower bed (650 feet northwest of slope, 154-inch cut).	352D	A	3	5.90	40.11	47.70	6.29	38	2.0	.....	.....	285
	1		1	.....	42.63	50.69	6.68	38	.....	.....	.....	332
Same (1,100 feet northwest of slope, 12-foot 64-inch cut).	353D	A	3	5.16	40.71	48.78	5.35	33	1.4	.....	.....	285
	1		1	.....	42.92	51.44	5.64	36	.....	7.150	12.870	332
	2		2	.....	45.49	54.51	.....	38	.....	7.539	13.570	332
Same (run of mine, 40 tons).....	346D	C	1	5.58	38.92	46.51	8.99	51	1.1	7.990	14.382	368
	2		2	.....	41.22	49.26	9.52	54	1.1	67.61	12.170	368
Royal Blue mine, Book Cliffs bed, 582 feet north by 175 feet west, 96-inch cut. ^a	10045	B	3	5.29	41.51	48.87	4.33	60	1.14	7.161	14.245	800
	1		1	.....	45.56	54.44	.....	62	1.25	7.914	14.245	800
	2		2	.....	43.83	51.00	4.57	65	1.17	7.093	12.757	285
	3		3	.....	45.93	54.07	.....	68	1.24	7.489	13.480	285
Price, Huntington Creek prospect, run of mine.....	3199	C	1	6.05	42.02	47.06	4.87	55	1.38	7.806	13.151	332
	2		2	.....	44.73	50.09	5.18	59	1.47	7.776	13.997	13
	3		3	.....	47.17	52.83	.....	62	1.55	8.202	14.764	13
	4		4	.....	48.04	52.75	.....	60	1.54	8.240	14.832	800
Sunnyside, sec. 32, T. 14 S., R. 14 E., near mouth of Whitmore Canyon, No. 1 mine, Upper (70-inch) bed.	2189	B	1	3.37	38.04	52.75	5.54	60	1.3	.....	.....	285
	2		2	.....	39.37	54.59	6.04	62	.....	.....	.....	285
Sunnyside mines, upper and lower beds, composite sample.	2192	B	1	3.43	37.02	51.68	7.17	78	1.5	.....	.....	285
	2		2	.....	39.06	53.52	7.42	81	.....	.....	.....	285
	3		3	.....	42.19	57.81	.....	87	.....	.....	.....	285
12 miles northwest of, SE ¼ NW ¼ sec. 23, T. 13 S., R. 12 E., in Durout Canyon, 91-foot bed (not worked, 94-foot cut).	2190	B	1	4.98	38.20	52.04	3.88	54	2.4	.....	.....	285
	2		2	.....	40.20	55.72	4.08	57	.....	.....	.....	285
Winterquarters, ¼ sec. 7, T. 13 S., R. 7 E., No. 1 mine, 6,000 feet in, Winterquarters bed, 10-foot cut.	2541	B	1	8.10	40.21	48.01	5.78	86	3.9	6.788	12.162	285
	2		2	.....	43.73	49.96	6.29	94	.....	7.354	13.237	316
	3		3	.....	46.69	53.31	.....	100	.....	7.847	14.125	316

^a Sample taken by mine operator according to official method of Bureau of Mines.

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.				Ultimate.				Calorific value.		Reference.				
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.		Air- dry- ing loss.	Calo- ries. thermal units.	Bul- letin No.	Page of this bulle- tin.
UTAH—Continued.																	
EMERY COUNTY.																	
Clear Creek (Carbon County), 5 miles southeast of; 12 miles east of Fairview (Sanpete County), S. $\frac{1}{2}$ sec. 24, T. 14 S., R. 7 E., Huntington Canyon, prospect pit, 9 $\frac{1}{2}$ -foot cut.	2410	B	1	6.04	38.96	48.40	6.60	0.83								285	801
			2		41.46	51.52	7.02	.88								316	
			3		44.59	55.41		.95									
Emery, 6 miles southeast of; NE. $\frac{1}{2}$ SW. $\frac{1}{2}$ sec. 2, T. 23 S., R. 6 E., west of Muddy Creek Canyon, Emery mine, 50 feet in, Emery (5-foot) bed, 5-foot cut.	2386	B	1	5.11	36.71	50.42	7.76	2.06								285	802
			2		38.69	53.13	8.18	2.17									
			3		42.14	57.86		2.36									
Huntington, 7 miles northwest of; NE. $\frac{1}{2}$ sec. 11, T. 14 S., R. 6 E., in Huntington Canyon, Bear Gulch prospect, 10-foot 11-inch cut.	2409	B	1	5.19	43.89	46.91	4.01	.31								285	802
			2		46.29	49.48	4.23	.33									
			3		48.34	51.66		.34									
Mount Pleasant (Sanpete County), 12 miles east of; sec. 2, T. 15 S., R. 6 E., Larsen mine, Larsen bed (900 feet from entrance, 8-foot cut).	2387	B	1	8.46	41.17	46.09	4.28	.48								285	802
			2		44.97	50.35	4.68	.52									
			3		47.18	52.82		.55									
Same (7 $\frac{1}{2}$ -foot cut).	2142	B	1	7.76	42.41	47.02	2.81	.52									802
			2		45.98	50.97	3.05	.56									
			3		47.43	52.57		.58									
Woodside, 4 miles east of; Peterson prospect, weathered some, 48-inch cut.	3957	B	1	4.75	33.58	50.24	11.43	1.15								316	803
			2		35.26	52.74	12.00	1.21									
			3		40.07	59.93		1.38									
13 miles north of; 8 miles south of Sunnyside (Carbon County), Prentiss prospect, lower bed, 16-foot cut.	4014	B	1	9.79	33.39	50.44	6.38	.60								316	803
			2		39.83	60.17		.72									
			3		37.01	55.92	7.07										
Same (weathered, 16-foot cut).	4013	B	1	9.01	31.78	51.03	8.18	.46								316	803
			2		34.93	56.08	8.99	.51									
			3		38.38	61.62		.56									
14 miles north of; 8 miles northeast of Verde, sec. 4 (?), T. 16 S., R. 14 E., in Horse Canyon, 14 $\frac{1}{2}$ -foot cut, Horse Canyon bed.	2200	B	1	4.76	38.16	52.09	4.99	.74								285	804
			2		40.07	54.69	5.24	.78									
			3		42.28	57.72		.82									
14 $\frac{1}{2}$ miles north of; 8 $\frac{1}{2}$ miles northeast of Verde, sec. 4, T. 16 S., R. 14 E., west side of Horse Canyon, 400 feet from opening, cut 13 feet 5 inches.	4015	B	1	5.20	36.03	52.69	6.08	.88								316	804
			2		38.01	55.98	6.41	.94									
			3		40.61	59.39											
			4						5.32	81.03	1.47	12.18				371	

GRAND COUNTY.

Green River, 10 miles northeast of; sec. 23, T. 20 S., R. 17 E., Black Baby mine, 20 feet in west entry, 73-foot bed, 5 $\frac{1}{2}$ -foot cut.
Thompsons, 5 miles north of; T. 21 S., R. 20 E., Ballard mine, 63 $\frac{1}{2}$ -inch bed, full bed cut.

Same (75 feet above Ballard mine, 11 feet in tunnel, 4 $\frac{1}{2}$ -foot cut).

8 $\frac{1}{2}$ miles north of; T. 20 S., R. 21 E., in Nash Canyon, 1 $\frac{1}{2}$ miles northwest of Nash ranch, 4 $\frac{1}{2}$ -foot cut.

IRON COUNTY.

Cedar City, 4 miles southeast of; sec. 31, T. 36 S., R. 10 W., west edge of Colob Plateau near top, altitude 8,700 \pm feet, Curry mine, 43-inch bed, 29-inch cut.
Same, 92-inch bed, 77-inch cut.

IRON COUNTY.

Cedar City, 4 miles southeast of; sec. 31, T. 36 S., R. 10 W., west edge of Colob Plateau near top, altitude 8,760 ± feet, Carry mine, 43-inch bed, 29-inch cut.
Same, 92-inch bed, 77-inch cut.

7 miles east of; NW. $\frac{1}{4}$ sec. 4, T. 37 S., R. 10 W., South Fork Coal Creek Canyon, Wood and Taylor mine, near top of Colob Plateau, altitude 8,900 ± feet, 330 feet from mouth, 101-inch bed, 65-inch cut.
7 miles southeast of; NW. $\frac{1}{4}$ sec. 36, T. 36 S., R. 10 W., on trace, Creek, Jones mine, 100 feet from entrance, 48-inch bed.
8 miles southeast of; SE. $\frac{1}{4}$ sec. 36, T. 36 S., R. 10 W., in Coal Creek Canyon, Jones and Bullock mine, altitude 7,200 feet, 55-inch bed, 46½-inch cut.

Kanarraville, 4 miles northeast of; sec. 28, T. 37 S., R. 11 W., near top at margin of Colob Plateau, 270 feet in, 84-inch cut.
5 miles east of; NW. $\frac{1}{4}$ sec. 33, T. 37 S., R. 11 W., Kanarra mine, cut 8 feet 9 inches.

6 miles northeast of; 7 miles south of Cedar City, NW. $\frac{1}{4}$ sec. 24, T. 37 S., R. 11 W., on Shirts Creek, west edge of Colob Plateau, Culver mine, altitude 8,000 feet (125 feet from mouth, 79-inch cut).
Same (95-inch cut).

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.				Ultimate.				Calorific value.		Reference.				
	Laboratory No.	Kind.	Con- diti- on.	Mols- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.		Air- dry- ing loss.	Calo- rifics.	British thermal units.	Page of this bulle- tin.
UTAH—Continued.																	
IRON COUNTY—continued.																	
New Harmony, 4 miles northwest of; sec. 32, T. 37 S., R. 13 W. (New Harmony mine, altitude 6,200 feet, ^a 53-inch cut).	3793	B	1	11.01	10.39	36.09	42.51	3.27								316	809
			2		11.68	40.55	47.77	3.67									
			3		22.36	77.64		7.03									
Same (Harmony mine, altitude 6,200 feet, ^a 56-inch cut).	3794	B	1	4.61	5.11	47.31	42.97	4.44								316	809
			2		5.36	49.59	45.05	4.65									
			3		9.76	90.25		8.46									
Same (entry No. 3, altitude 6,000± feet, No. 3 bed, 4½-foot cut, regular sample). ^b	5309	B	1	8.29	13.44	46.64	32.63	3.17	3.55	48.48	0.85	11.32	3.9	4,575	8,235	341	809
			2		14.65	49.77	35.58	3.46	2.87	52.86	.93	4.30		4,989	8,979		
			3		22.74	77.26		3.37	3.45	82.07	1.44	6.67		7,744	13,938		
Same (entry No. 3, altitude 6,000 ± feet, No. 3 bed, picked sample ^b).	5310	B	1	9.50	13.22	49.22	28.06	3.35	3.44	51.44	.85	12.66	5.7	4,922	8,860	341	809
			2		14.61	54.39	31.00	3.02	2.63	56.85	.94	4.06		5,439	9,790		
			3		21.17	78.83		3.68	3.82	82.39	1.36	6.75		7,883	14,188		
Same (entry No. 3, altitude 6,000± feet, No. 4 bed, ^b 4½-foot cut).	5312	B	1	7.02	10.30	60.61	22.07	4.06	3.32	62.77	.92	6.86	3.6	5,782	10,408	341	809
			2		11.08	65.18	23.74	4.37	2.73	67.50	.99	.67		6,219	11,194		
			3		14.53	85.47		5.73	3.58	88.51	1.30	.88		8,155	14,679		
Same (entry No. 4, No. 6 bed, ^b 4-foot cut).....	5311	B	1	8.21	4.41	58.02	20.36	2.28	2.98	53.31	.90	11.17	5.2	4,949	8,908	341	809
			2		4.80	63.21	31.99	2.48	2.26	58.07	.98	4.22		5,392	9,705		
			3		7.06	92.94		3.65	3.32	85.38	1.44	6.21		7,928	14,270		
KANE COUNTY.																	
Glendale, ½ mile northeast of; NW ¼ sec. 24, T. 40 S., R. 7 W., Glendale mine, 86-inch cut.	5341	B	1	20.56	32.43	40.79	6.22	1.19	6.08	57.11	1.01	28.39	4.7	5,441	9,794	341	810
			2		40.82	51.35	7.83	1.50	4.78	71.89	1.27	12.73		6,849	12,329		
			3		44.20	55.71		1.63	5.19	78.00	1.38	13.80		7,431	13,376		
13 miles northwest of; NE ¼ sec. 26, T. 39 S., R. 9 W., on North Fork Virgin River, Camel King prospect, 66-inch bench (upper 2 feet). Same (lower ¾ feet).....	5306	B	1	15.74	41.92	28.00	14.34	1.82	6.11	51.96	1.16	25.11	4.5	5,282	9,508	341	811
			2		49.75	33.23	17.02	1.57	5.17	61.67	1.38	13.19		6,269	11,284		
			3		59.95	40.05		1.89	6.23	74.32	1.66	15.90		7,555	13,599		
Same (lower ¾ feet).....	5308	B	1	7.35	46.93	22.48	23.24	1.61	6.18	51.88	1.06	16.03	1.1	5,753	10,355	341	811
			2		50.65	24.27	25.08	1.74	5.79	56.00	1.14	10.25		6,209	11,797		
			3		67.61	32.30		2.92	7.73	74.75	1.52	13.68		8,288	14,918		
Same, 29-inch cut.....	5313	B	1	12.69	37.34	46.03	3.94	4.03	5.43	62.95	.98	22.67	2.1	6,094	10,969	.....	811
			2		42.77	52.72	4.51	4.62	4.40	72.10	1.12	13.05		6,980	12,564		
			3		44.79	55.21		4.84	4.82	75.50	1.17	13.07		7,309	13,156		
Orderville, 2 miles south of; NW ¼ sec. 16, T. 41 S., R. 7 W., Kroll mine, 9-foot 6½-inch bed.	5314	B	1	16.99	32.59	37.38	13.44	3.41	4.39	46.66	.85	30.25	3.9	4,379	7,882	341	811
			2		36.57	44.82	16.11	4.09	4.26	55.94	1.02	18.58		5,260	9,460		
			3		49.57	53.43		4.88	5.03	66.68	1.22	22.14		6,288	11,204		

SANPETE COUNTY.																			
Sterling, 2 miles east of; sec. 35, T. 18 S., R. 2 E., Morrison mine, Sterling bed, 2½-foot cut.	B	2141	1	8.07	42.59	43.20	6.14	.92	.....	1.8	6,537	11,767	812					
			2	.....	46.33	46.99	6.08	1.00	.....	.....	7,111	12,800	285			
			3	.....	49.65	50.35	6.08	1.07	.....	.....	7,019	13,714	812			
Wales, 2 miles west of; sec. 26, T. 15 S., R. 2 E., In Now Canyon, Wales mine, Wales bed, 3-foot cut.	B	2143	1	2.17	33.50	50.94	13.39	4.02	.....	8	.....	.....	285			
			2	.....	34.24	52.07	13.69	4.72	.....	.....	.....	.....	812	
			3	.....	39.67	60.33	.....	5.47	.....	.....	.....	.....	812
SUMMIT COUNTY.																			
Coalville, 3 miles northeast of; sec. 3, T. 2 N., R. 5 E., Wasatch mine, Wasatch bed (100 feet from entrance, 9-foot cut).	B	2408	1	13.92	37.96	43.67	4.45	1.03	.....	6.9	6,079	10,942	812					
			2	.....	44.10	50.73	5.17	1.20	.....	.....	7,062	12,712	285			
			3	.....	46.50	53.50	.....	1.27	.....	.....	7,447	13,405	812		
Same (5,000 feet east of slope on 500-foot level, 10½-foot cut).	A	3290	1	14.07	37.21	42.46	6.26	1.28	.....	5.7	5,817	10,471	332					
			2	.....	43.70	49.42	7.28	1.49	.....	.....	6,769	12,184	812			
			3	.....	46.70	53.30	.....	1.61	.....	.....	7,301	13,142	332		
Same (4,500 feet east of slope, on 400-foot level, 127-inch cut).	A	3291	1	13.86	39.69	41.19	5.26	1.32	.....	5.2	.....	.....	812			
			2	.....	46.08	47.81	6.11	1.53	.....	.....	.....	.....	332	
			3	.....	49.08	50.92	.....	1.63	.....	.....	.....	.....	812
Same (slack through 1½-inch screen).....	C	3259	1	12.66	38.30	43.19	5.85	1.39	.....	2.3	.....	.....	332			
			2	.....	43.85	49.45	6.70	1.59	.....	.....	.....	.....	812	
			3	.....	47.00	53.00	.....	1.70	.....	.....	.....	.....	812
Same (1,200 feet southwest of slope, 9½-foot cut).	A	8065	1	14.9	34.0	46.5	4.6	1.1	.....	5.7	5,980	10,770	812					
			2	.....	40.0	54.6	5.4	1.3	.....	.....	7,030	12,650	332			
			3	.....	42.5	57.5	.....	1.35	.....	.....	7,430	13,370	812		
Same (1,800 feet north of slope, 10½-foot cut)....	A	8064	1	14.2	36.0	44.8	5.0	1.41	.....	4.8	5,905	10,690	812					
			2	.....	42.0	52.1	5.9	1.64	.....	.....	6,884	12,390	332			
			3	.....	44.6	55.4	.....	1.74	.....	.....	7,310	13,160	812		
UINTA COUNTY.																			
Vernal, 3 miles north of; NE. ¼ NW. ¼ sec. 2, T. 4 S., R. 21 E., Gibson mine, 80½-inch bed, 120 feet in mine (lower 14 inches of 22-inch top bench).	B	5515	1	9.43	32.77	44.94	12.86	1.93	.....	3.0	5,759	10,365	813					
			2	.....	36.18	49.62	14.20	2.13	.....	.....	6,359	11,446	341			
			3	.....	42.17	57.83	.....	2.48	.....	.....	7,411	13,340	415		
Same (middle bench, 42½-inch cut).....	B	5517	1	11.66	34.10	51.50	9.44	1.92	.....	4.4	5,875	10,575	813					
			2	.....	38.94	50.37	10.69	2.17	.....	.....	6,550	11,970	341			
			3	.....	43.00	56.40	.....	2.43	.....	.....	7,446	13,403	415		
Same (lower bench, 21-inch cut).....	B	5518	1	10.22	32.68	44.85	12.25	.77	.....	3.3	5,936	10,685	813					
			2	.....	36.40	49.96	13.64	1.00	.....	.....	6,612	11,992	415			
			3	.....	42.15	57.85	.....	1.86	.....	.....	7,656	13,781	341		
5 miles northwest of; lots 1 and 2, NW. ¼ sec. 11, T. 4 S., R. 20 E., C. C. Rich mine, 59-inch bed (2 lower benches, 13-inch cut).	B	5513	1	8.21	34.30	45.70	11.79	1.76	.....	2.5	5,152	11,074	814					
			2	.....	37.37	49.80	12.83	1.92	.....	.....	6,703	12,065	415			
			3	.....	42.87	57.13	.....	2.20	.....	.....	7,490	13,842	341		
Same (2 upper benches, 27½-inch cut).....	B	5510	1	8.82	36.00	48.33	6.25	1.66	.....	2.9	5,571	11,828	814					
			2	.....	40.14	53.00	6.86	1.82	.....	.....	6,207	12,973	415			
			3	.....	43.10	56.90	.....	1.95	.....	.....	7,233	13,919	341		
7 miles northwest of; NW. ¼ SW. ¼ sec. 2, T. 4 S., R. 20 E., J. Rich mine, 72-inch bed (2 lower benches, 17½-inch cut).	B	5512	1	8.64	36.09	47.21	8.06	1.39	.....	2.8	6,431	11,581	814					
			2	.....	39.50	51.68	8.82	1.52	.....	.....	7,042	12,676	341			
			3	.....	43.16	56.68	.....	1.67	.....	.....	7,723	13,901	415		
Same (2 upper benches, 36½-inch cut).....	B	5509	1	8.65	36.16	48.19	7.00	1.63	.....	2.6	6,466	11,639	814					
			2	.....	39.58	52.75	7.67	1.78	.....	.....	7,078	12,740	341			
			3	.....	42.87	57.13	.....	1.93	.....	.....	7,666	13,799	415		

b Sample taken in 1907 by G. B. Richardson.

a Sample taken in 1906 by W. T. Lee.

[illegible]

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.		Reference.		
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.		Calo- ries.	British thermal units.
VIRGINIA—Continued.																
TAZEWELL COUNTY—continued.																
Pocahontas, West Pocahontas mine—Continued.																
Same (right air course 6 off Newport News entry, 2 miles from drift mouth, 7½-foot cut).	8613	A	1	3.7	17.0	76.2	3.1	0.60						3.2		827
Same (entry 3 off Newport News entry, 2 miles from drift mouth, 9½-inch cut).	8614	A	3		17.5	79.3	3.2	.65								827
			2	4.9	16.0	76.1	3.0	.60					4.3			827
Same (pillar in haulway off Salem entry, 71½-inch cut).	8615	A	3		17.0	82.5	3.1	.65								827
			1	5.3	16.0	74.7	4.0	.60					4.7	7,960	14,330	827
Same (pillar, Jed entry, 11,000 feet from drift mouth, 100½-inch cut).	8638	A	3		16.5	79.3	4.2	.60						8,400	15,120	827
			2	3.4	15.0	78.8	2.8	.65					2.9	8,765	15,780	827
Same (pillar, left 2nd St. Paul entry, 900 feet from drift mouth, 101½-inch cut).	8639	A	3		15.5	81.6	2.9	.65								827
			1	3.4	16.0	84.0	3.8	.70					2.9			827
Same (composite of Nos. 8613, 8614, and 8636)...	8745	.....	3		17.0	83.0	3.9	.75								827
			1	4.1	16.5	75.2	3.18	.63	4.97	84.29	1.21	5.72	3.5	8,190	14,740	827
Same (composite of Nos. 8638 and 8639).....	8749	.....	3		17.0	79.7	3.32	.66	4.70	87.91	1.26	2.15		8,515	15,380	827
			2	3.5	15.0	82.5	3.43	.68	4.86	90.93	1.30	2.23		8,835	15,910	827
Richlands, 5 miles northwest of; Richlands mine, No. 4 bed (2,000 feet southeast of opening, 56½-inch cut).	4304	A	2		15.5	80.9	3.56	.70	4.77	84.40	1.20	5.52	2.9	8,203	14,770	827
			1	3.03	16.0	84.0	3.56	.73	4.54	87.48	1.24	2.48		8,505	15,310	827
Same (1,600 feet east of opening, 49-inch cut)....	4305	A	3		25.82	66.53	4.62	1.70	4.71	90.71	1.29	2.56	2.4	8,820	15,880	828
			1	2.60	26.63	68.61	4.76	1.84								332
Same (run of mine).....	4573	C	3		27.96	72.04	4.48	1.35					1.9	8,131	14,636	828
			1	5.62	25.12	70.28	4.60	1.39						8,348	15,026	828
			3		26.33	73.67	4.60	1.46						8,751	15,752	828
			1		23.07	61.52	9.79	1.21	4.78	73.35	1.26	9.61	5.0	7,369	13,264	828
			3		24.44	65.18	10.38	1.28	4.41	77.71	1.34	4.88		7,808	14,053	828
			3		27.27	72.73		1.43	4.92	86.71	1.49	5.45		8,712	15,682	828
			4						4.99	87.97	1.52	5.52		8,806	15,861	828

WISE COUNTY.																
Georgel, Swansea mine, Upper Banner bed, room 21 off seventeenth entry west, 2,600 feet from outcrop, 97½-inch cut.	10386	B	1	2.48	31.71	60.30	5.51	.52	5.59	79.69	1.56	7.13	1.5	7.918	14.252	829
Norton, ½ mile east of; No. 4 mine.	10390	B	2	.....	31.47	61.53	5.63	.56	5.76	86.60	1.70	5.38	.....	8.005	15.489	830
Stonega, Stonega mine, Imboden bed, No. 11 heading off fifth left face, 60-inch cut.	10398	B	2	.....	32.82	60.11	3.76	.93	5.55	80.01	1.58	8.20	1.9	7.894	14.909	831
Toms Creek (Herald post office), Coburn mine (3,000 feet northeast of drift mouth, east heading 17, Upper Banner bed, 79½-inch cut).	2281	A	3	.....	33.94	62.17	3.89	.97	5.36	82.75	1.63	5.44	.....	8.164	14.065	832
Same (2,000 feet northeast of drift mouth, room 3, west heading 11, 79½-inch cut).	2282	A	3	.....	33.10	58.27	6.47	.68	5.29	77.85	1.47	8.24	.8	7.774	13.991	833
Same (lump, over 3½-inch bar screen).	2382	C	2	.....	33.83	59.56	6.61	.70	5.16	79.57	1.50	6.46	.....	7.946	14.303	834
Virginia City, Virginia City No. 1 mine "Jaw Bone" bed (2,400 feet northwest of opening, 97½-inch cut).	5217	B	2	.....	36.23	63.77	4.49	.52	5.53	85.20	1.61	6.91	.....	8.509	15.316	835
Same (3,200 feet northwest of opening, 80½-inch cut).	5235	B	3	.....	32.35	62.04	4.61	.53	.....	.....	.....	.....	1.6	8.079	14.542	836
WASHINGTON.			3	.....	33.35	65.04	4.13	.55	34.96	60.97	.....	.....	.....	8.303	14.945	837
CLALLAM COUNTY.			3	.....	31.99	60.97	4.13	.55	.....	.....	.....	.....	.....	8.705	15.069	838
			3	.....	32.95	62.80	4.25	.57	.....	.....	.....	.....	.....	.....	.....	839
			3	.....	34.41	65.59	.....	.67	.....	.....	.....	.....	.....	.....	.....	840
			3	.....	31.65	60.82	4.48	.69	5.17	80.35	1.59	7.74	2.2	8.039	14.470	841
			3	.....	34.23	65.77	.....	.72	.....	.....	.....	.....	.....	8.693	15.647	842
			3	.....	28.58	53.09	14.96	1.18	.....	.....	.....	.....	.....	8.741	15.734	843
			3	.....	29.58	54.94	15.48	1.22	.....	.....	.....	.....	.....	6.916	12.449	844
			3	.....	35.00	65.00	.....	1.44	.....	.....	.....	.....	.....	8.408	15.242	845
			3	.....	27.84	54.17	14.94	1.24	.....	.....	.....	.....	.....	7.113	12.803	846
			3	.....	28.71	55.88	15.41	1.28	.....	.....	.....	.....	.....	8.409	15.135	847
			3	.....	33.94	66.06	.....	1.51	.....	.....	.....	.....	.....	.....	.....	848
CLALLAM COUNTY.			3	.....	33.94	66.06	.....	1.51	.....	.....	.....	.....	.....	.....	.....	849
CLALLAM, 4 miles east of; on seashore, Fuca mine, 100 feet up slope, 400 feet from mouth of gangway, 25½-inch cut.	10030	B	1	11.24	39.99	36.20	12.57	5.10	5.97	56.70	90	18.76	3.4	5.825	10.487	852
			2	.....	45.03	40.79	14.16	5.75	5.33	63.88	1.01	9.87	.....	6.564	11.815	853
			3	.....	52.48	47.52	.....	6.70	6.21	74.42	1.18	11.49	.....	17.647	13.765	854
KING COUNTY.			3	.....	52.48	47.52	.....	6.70	6.21	74.42	1.18	11.49	.....	17.647	13.765	855
Barneston, S.E. ¼ NW ¼ sec. 12, T. 22 N., R. 7 E., prospect entry, 10 feet in, 50½-inch bed, 50½-inch cut.	9111	B	1	14.1	5.5	51.6	28.8	.45	.....	.....	.....	.....	12.6	4.450	8.015	857
			2	.....	6.5	60.0	33.5	.50	.....	.....	.....	.....	.....	5.180	9.325	858
			3	.....	6.5	90.5	.....	.73	.....	.....	.....	.....	.....	7.700	4.030	859
Bayne, NW ¼ sec. 22, T. 21 N., R. 7 E., Bayne mine 55 feet above gangway, No. 5 bed, (57½-inch cut).	9109	B	1	5.06	33.82	42.09	18.43	.63	5.10	60.12	1.17	14.25	3.6	6.146	11.093	860
Same (No. 3 bed, 47-inch cut, face of south gangway).	9110	B	1	4.94	33.01	40.97	21.08	.54	5.13	59.35	1.24	12.66	3.5	5.063	10.733	861
Same (No. 3 bed, 47-inch cut, face of south gangway).			2	.....	44.20	55.80	.....	.52	5.93	78.37	1.32	19.78	.....	8.063	14.459	862
Same (No. 3 bed, 47-inch cut, face of south gangway).			3	.....	34.73	43.09	22.18	.57	4.83	62.44	1.30	11.16	.....	6.273	11.251	863
Same (No. 1 bed, north side main rock tunnel, 70-inch cut).	9112	B	2	.....	44.62	55.38	.....	.73	6.21	80.23	1.67	18.16	.....	5.000	14.508	864
			3	.....	30.15	42.15	19.03	.48	5.18	57.31	1.12	16.88	7.6	5.769	10.384	865
			3	.....	33.01	46.15	20.84	.53	4.62	62.75	1.23	10.03	.....	6.316	11.369	866
			3	.....	41.70	58.80	.....	.67	5.83	79.28	1.55	12.67	.....	7.979	14.362	867
			3	.....	33.32	41.79	17.59	.56	5.20	59.42	1.44	15.79	4.4	5.980	10.764	868
NE ¼ NW ¼ sec. 22, T. 21 N., R. 7 E., drift lower 2 feet of No. 5 bed (9 feet from entrance).	9268	B	2	.....	35.94	45.09	18.97	.60	4.74	64.10	1.51	10.04	.....	6.451	11.011	869
			3	.....	44.35	55.65	.....	.74	5.85	79.11	1.91	12.49	.....	7.961	14.330	870

Same (in new mine, composite of Nos. 9476-7).	9491	B	3	1	3.97	41.11	58.80	12.09	12.09	57	57	5.55	67.50	1.70	12.67	1.7	6.857	12.342	835
1 mile northeast of; SE. $\frac{1}{4}$ sec. 15, T. 21 N., R. 7 E., Carbon mine (No. 1 bed, 4-foot cut).	9485	B	1	2	4.23	36.63	48.76	12.59	12.59	51	51	5.32	70.29	1.77	10.90	2.3	6.982	14.702	837
Same (No. 1 bed, spherical nodules).	9486	B	1	2	3.81	38.29	51.71	11.62	11.62	47	47	4.99	72.05	1.47	9.40	1.5	8.260	14.850	837
Same (No. 2 bed, 32 $\frac{1}{2}$ -inch cut).	9489	B	1	2	5.13	34.07	55.45	9.58	9.58	41	41	5.19	72.48	1.14	12.73	3.1	7.139	12.847	837
Same (composite of Nos. 9485 and 9486).	9492	B	1	2	4.13	32.49	58.97	8.54	8.54	38	38	5.32	83.54	1.31	10.81	1.9	8.227	14.809	838
1 mile south of; sec. 28, T. 21 N., R. 7 E., Eureka (abandoned) mine, 174 feet in, 53 $\frac{1}{2}$ -inch cut.	9294	B	1	2	5.94	32.79	52.74	10.34	10.34	45	45	5.03	74.59	1.63	7.44	4.2	7.408	13.334	839
1 $\frac{1}{2}$ miles east of; NW. $\frac{1}{4}$ sec. 23, T. 21 N., R. 7 E., Big Six mine, Pechonitas (?) 37-inch bed, 30 feet in mine, 34-inch cut.	9278	B	1	2	4.57	31.01	52.18	12.83	12.83	73	73	5.27	70.07	1.05	10.63	3.1	7.074	12.732	839
Black Diamond, $\frac{1}{4}$ mile east of; NW. $\frac{1}{4}$ sec. 14, T. 21 N., R. 6 E., No. 14 mine (level 8, north gangway, Upper McKay a 44-foot bed, 33-foot cut).	9114	B	1	2	7.98	37.28	62.72	8.38	8.38	87	87	5.72	84.24	1.26	7.91	6.0	8.504	15.307	839
Same (north level 8, 70 feet from gangway, McKay bed, 63 $\frac{1}{2}$ inches, 63 $\frac{1}{2}$ -inch cut).	9105	B	1	2	7.4	39.5	49.0	4.1	4.1	128	128	5.56	68.25	1.92	18.92	4.8	6.945	12.500	839
1 mile northeast of; SW. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 13, T. 21 N., R. 6 E., Lawson mine (level 6, side of gangway, McKay bed, 41-foot cut).	9104	B	1	2	4.9	42.0	48.0	4.5	4.5	47	47	5.85	72.41	1.58	15.18	3.2	7.300	13.140	840
Same (Upper McKay bed, 41 feet, 52 $\frac{1}{2}$ -inch cut).	9107	B	1	2	6.07	36.23	43.50	14.20	14.20	56	56	5.22	62.38	1.74	11.93	4.2	8.060	14.510	840
1 mile northwest of; SW. $\frac{1}{4}$ sec. 11, T. 21 N., R. 6 E., Morgan mine (level 6, 15 feet above north gangway, Upper McKay bed, 50 $\frac{1}{2}$ inches, 54 $\frac{1}{2}$ -inch cut).	9108	B	1	2	7.77	37.97	48.90	9.16	9.16	44	44	5.48	69.46	1.50	13.42	5.4	6.485	11.673	841
Same (level 6, 12 feet above north gangway, 6-foot cut, McKay bed).	9106	B	1	2	6.75	40.01	47.90	5.34	5.34	135	135	5.76	67.67	1.89	17.90	4.6	6.848	12.326	841
Coal Creek, SE. $\frac{1}{4}$ sec. 26, T. 24 N., R. 5 E., Bagley mine (level 1, gangway entrance to rock tunnel, Bagley No. 1 bed, 5 feet, 43-foot cut).	9170	B	1	3	12.05	36.82	40.72	10.41	10.41	34	34	5.75	76.98	2.15	13.63	6.6	7.791	14.024	842
Same (water level 1, Bagley No. 2 bed, upper bench, 31 inches, 23 $\frac{1}{2}$ -inch cut).	9171	B	1	3	9.27	41.86	46.30	11.84	11.84	39	39	5.01	66.12	1.56	15.08	7.463	13.423	842	
Same (water level 1, Bagley No. 2 bed, lower bench, 49 inches, 48-inch cut).	9169	B	1	2	12.32	36.05	39.70	11.16	11.16	89	89	5.77	57.75	1.21	23.02	7.5	6.502	10.624	842
Same (water level 1, Bagley No. 2 bed, lower bench, 49 inches, 48-inch cut).		B	1	3	41.92	45.35	12.73	12.73	12.73	1.02	1.02	5.62	65.86	1.38	13.99	6.542	11.776	474	
		B	1	3	48.04	51.96	51.96	12.73	12.73	1.17	1.17	5.75	75.47	1.58	16.03	7.496	13.493	474	

* Also known as Little McKay bed.

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.				Ultimate.				Calorific value.		Reference.			
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.		Air- dry- ing loss.	Calo- ries.	British thermal units.
WASHINGTON—Continued.																
KING COUNTY—continued.																
Coal Creek—Continued. SE. $\frac{1}{4}$ sec. 25, T. 24 N., R. 5 E., Ford mine, east end of air course 1 above gangway, 5,400 feet east of the slope (Muldoon bed, 62 $\frac{1}{2}$ -inch cut).	9163	B	1	14.33	31.54	42.38	11.75	0.44	5.84	56.12	1.25	24.60	9.7	5,536	9,965	842
			2	.....	36.81	49.47	13.72	.51	4.96	65.51	1.46	16.04	.....	6,462	11,631	474
			3	.....	42.66	57.34	.....	.59	5.75	75.93	1.69	16.04	.....	7,489	13,480	
Same (level 1, gangway, 700 feet east of cross tunnel, No. 3 bed, lower bench, 21 $\frac{1}{2}$ -inch cut).	9164	B	1	14.45	32.53	45.65	7.37	.42	5.88	59.60	1.05	25.68	9.7	5,789	10,420	842
			2	.....	38.02	53.37	8.61	.49	4.99	69.07	1.23	15.01	.....	6,707	12,181	474
			3	.....	41.60	58.40	.....	.54	5.46	76.23	1.36	16.41	.....	7,404	13,327	
Same (level 1, gangway, 1,400 feet west of slope, Muldoon (4-foot 1-inch) bed, 65-inch cut).	9165	B	1	12.86	35.79	40.87	10.48	.55	5.83	58.92	1.36	22.86	7.1	5,700	10,368	842
			2	.....	41.07	46.90	12.03	.63	5.05	67.02	1.56	13.11	.....	6,609	11,896	474
			3	.....	46.68	53.32	.....	.72	5.74	76.86	1.77	14.91	.....	7,514	13,525	
Same (level 1, gangway, 5,750 feet west of slope, Muldoon (6 $\frac{1}{2}$ -inch) bed, 56-inch cut).	9166	B	1	13.07	34.69	39.50	12.74	.71	5.76	56.45	1.35	22.99	7.2	5,535	9,963	842
			2	.....	39.91	45.43	14.66	.82	4.96	64.94	1.55	13.07	.....	6,367	11,461	474
			3	.....	46.77	53.23	.....	.96	5.81	76.10	1.82	15.31	.....	7,401	13,430	
Same (level 1, gangway, 700 feet east of cross tunnel, No. 3 (55 $\frac{1}{2}$ -inch) bed, upper bench, 51 $\frac{1}{2}$ -inch cut).	9168	B	1	14.5	31.0	43.2	11.30	.36	5.80	56.23	1.08	25.23	8.6	5,505	10,015	842
			2	.....	36.0	50.8	13.22	.42	4.90	65.76	1.26	14.44	.....	6,505	11,710	474
			3	.....	41.50	58.50	.....	.48	5.65	75.78	1.45	16.64	.....	7,500	13,500	
Same (level 1, gangway, 650 feet east of cross tunnel, No. 4 (4 $\frac{1}{2}$ -foot) bed, 4 $\frac{1}{2}$ -foot cut).	9167	B	1	14.81	33.28	43.65	8.26	.37	6.03	58.48	1.34	25.52	8.9	5,686	10,235	842
			2	.....	39.06	51.24	9.70	.44	5.14	68.64	1.57	14.51	.....	6,674	12,012	474
			3	.....	43.26	56.74	.....	.49	5.69	76.01	1.74	16.07	.....	7,391	13,304	
Cumberland, 1 mile south of: SW. $\frac{1}{4}$ sec. 28, T. 21 N., R. 7 E., Independent mine, 18 feet in, 24 feet of slope (upper part of lower bench of bed, 41- inch cut).	9286	B	1	5.84	31.32	36.46	26.38	.47	4.80	52.77	1.30	14.28	3.4	5,294	9,529	844
			2	.....	33.26	38.72	28.02	.50	4.41	56.04	1.38	9.65	.....	5,622	10,120	474
			3	.....	46.21	53.79	.....	.69	6.13	77.86	1.92	13.40	.....	7,810	14,058	
Same (upper bench of bed, 41-inch cut).....	9474	B	1	6.01	29.75	40.76	23.48	.65	.....	.....	.....	.....	3.4	5,582	10,048	844
			2	.....	31.65	43.37	24.98	.69	.....	.....	.....	.....	.....	5,939	10,690	474
			3	.....	42.20	57.80	.....	.92	.....	.....	.....	.....	.....	7,918	14,252	
1 mile southeast of: SE. $\frac{1}{4}$ sec. 28, T. 21 N., R. 7 E., Sunset mine (30 feet down dip from surface, No. 1 bed, 59 $\frac{1}{2}$ -inch cut).	9263	B	1	12.73	31.06	43.73	12.48	.89	.....	.....	.....	.....	6.2	5,493	9,887	845
			2	.....	35.59	50.11	14.30	1.02	.....	.....	.....	.....	.....	6,294	11,329	474
			3	.....	41.53	58.47	.....	1.19	.....	.....	.....	.....	.....	7,344	13,219	
Same (about 1,450 feet from entrance to gang- way, No. 2 (3 $\frac{1}{2}$ -foot) bed, 36 $\frac{1}{2}$ -inch cut).	9264	B	1	4.49	34.07	39.67	21.77	.77	4.91	59.23	.91	12.41	2.2	5,960	10,728	845
			2	.....	33.67	41.54	22.79	.81	4.62	62.01	.95	8.82	.....	5,240	11,232	474
			3	.....	46.20	53.80	.....	1.05	5.98	80.32	1.23	11.42	.....	8,082	14,547	

9265	B	1	5.56	34.40	45.03	15.01	2.41	5.13	63.79	.96	12.70	2.8	6.491	11.684	845
		2	.....	36.43	47.68	15.89	2.55	4.78	67.55	1.01	8.22	.....	8,872	12,371	474
9276	B	1	4.91	26.44	30.08	38.54	3.03	5.68	80.30	1.20	9.79	2.6	8,169	14,701	846
		2	.....	27.81	31.65	40.54	4.1	.....	.....	.....	.....	.....	4,639	7,990	474
9293	B	1	5.24	38.79	47.55	8.42	7.2	.....	.....	.....	.....	.....	7,854	14,136	846
		2	.....	40.94	50.17	8.89	5.0	.....	.....	.....	.....	.....	7,027	12,649	474
10512	B	1	7.23	34.37	42.41	15.99	5.5	5.32	61.16	1.43	15.52	3.3	8,139	14,648	846
		2	.....	37.05	45.71	17.24	6.3	4.87	65.92	1.54	9.80	.....	6,646	11,963	474
9287	B	1	5.47	32.30	41.20	21.03	7.6	5.88	79.65	1.86	11.85	.....	8,030	14,454	847
		2	.....	34.17	43.59	22.24	6.9	5.01	59.49	1.64	12.14	2.8	8,002	10,822	474
		3	.....	43.94	56.06	.....	9.4	4.65	80.93	1.73	7.72	.....	6,300	11,448	847
		3	.....	.....	.....	.....	.....	5.98	80.93	2.22	9.93	.....	8,179	14,722	474
9284	B	1	4.80	35.64	47.40	12.16	5.2	5.35	66.81	1.65	13.51	2.7	6,773	12,191	847
		2	.....	37.44	49.79	12.77	5.5	5.06	70.18	1.93	11.14	.....	7,114	12,805	474
		3	.....	42.92	57.08	.....	6.3	5.80	80.45	1.98	9.71	.....	8,155	14,679	847
9285	B	1	6.18	30.00	37.49	26.33	6.5	.....	.....	.....	.....	4.0	5,342	9,016	474
		2	.....	31.97	39.97	28.06	6.9	.....	.....	.....	.....	.....	5,694	10,249	847
		3	.....	44.45	55.55	.....	9.5	.....	.....	.....	.....	.....	7,915	14,247	474
9323	B	1	18.08	32.56	41.32	8.04	5.1	.....	.....	.....	.....	10.9	5,449	9,807	847
		2	.....	39.75	50.44	9.81	6.2	.....	.....	.....	.....	.....	6,652	11,974	474
		3	.....	44.07	55.63	.....	6.9	.....	.....	.....	.....	.....	7,376	13,277	848
9487	B	1	14.26	34.41	42.24	9.09	5.7	.....	.....	.....	.....	7.1	5,710	10,278	474
		2	.....	40.13	49.27	10.60	6.6	.....	.....	.....	.....	.....	6,600	11,988	848
		3	.....	44.89	55.11	.....	7.4	.....	.....	.....	.....	.....	7,450	13,409	474
9484	B	1	6.10	39.23	51.23	3.44	4.8	5.97	72.72	1.63	15.76	2.9	7,352	13,234	848
		2	.....	41.78	54.56	3.66	5.1	5.63	77.45	1.74	11.01	.....	7,830	14,094	474
9103	B	1	7.3	34.0	47.9	11.8	5.3	5.84	80.30	1.81	11.43	.....	8,128	14,631	848
		2	.....	37.0	51.3	10.7	5.7	4.93	68.53	1.69	18.07	4.9	6,345	11,430	474
		3	.....	42.0	58.0	.....	6.5	5.58	77.57	1.82	12.50	.....	6,845	12,330	848
8544	B	1	14.23	30.29	43.82	11.66	3.6	5.77	56.70	2.06	14.14	6.1	7,750	13,950	849
		2	.....	35.32	51.09	13.59	4.2	4.89	66.11	1.24	13.75	.....	5,575	10,400	474
		3	.....	40.88	59.12	.....	4.9	5.66	76.51	1.44	15.90	.....	6,500	11,700	849
		3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7,525	13,550	474
8545	B	1	13.8	32.5	36.0	17.7	4.9	5.64	51.24	.95	23.98	3.8	5,075	9,135	849
		2	.....	37.5	42.0	20.5	5.2	4.77	59.43	1.10	13.60	.....	5,885	10,600	474
		3	.....	47.5	52.5	.....	7.2	6.00	74.77	1.38	17.13	.....	7,395	13,320	849
9883	B	1	18.03	33.47	34.42	14.08	3.8	5.95	51.74	1.03	26.82	8.5	5,044	9,079	474
		2	.....	40.83	41.99	17.18	4.6	4.82	63.12	1.26	13.16	.....	6,154	11,077	849
		3	.....	49.30	50.70	.....	5.5	5.82	76.21	1.52	15.89	.....	7,430	13,374	850
8542	B	1	17.9	29.0	43.8	9.3	3.5	.....	.....	.....	.....	8.0	5,450	9,810	474
		2	.....	35.5	53.0	11.3	4.5	.....	.....	.....	.....	.....	6,685	11,940	850
		3	.....	40.0	60.0	.....	5.0	.....	.....	.....	.....	.....	7,480	13,460	474
8543	B	1	15.06	29.36	44.23	11.35	1.12	5.65	55.58	1.09	25.21	6.6	5,531	9,956	850
		2	.....	34.57	52.07	13.36	1.32	4.69	65.43	1.28	13.92	.....	6,512	11,722	474
		3	.....	39.90	60.10	.....	1.52	5.41	75.52	1.48	16.07	.....	7,516	13,529	850

Same (about 1,450 feet from entrance to gangway, No. 3 (44½-inch) bed, 27½-inch cut).

Same (30 feet from entrance to tunnel, No. 7 (72½-inch) bed, 70-inch cut).

1 mile west of, NE. ¼ sec. 23, T. 21 N., R. 7 E., Rose-Marshall mine, from lumps under cover, 500 feet down slope from surface, left side, 73-inch cut).

Same, SE. ¼ NW. ¼ sec. 28, T. 21 N., R. 7 E., Naval mine (crosscut 1 above water-level gangway, 144 feet north of rock tunnel, No. 4 bed, 29½ inches, 29-inch cut).

Same (north water-level gangway, about 330 feet from rock tunnel, No. 6 bed, lower bench, 24-foot cut).

Same (position and bed same as No. 9284, upper bench, 19-inch cut).

Danville Junction, SW. ¼ sec. 24, T. 22 N., R. 6 E., Danville mine, 20 feet southwest, 71½-inch cut.

Franklin, sec. 19, T. 21 N., R. 7 E., surface prospect, Gem (?) bed, 32½-inch cut.

Sec. 19, T. 21 N., R. 7 E., surface exposure, McKay bed, 51½-inch cut.

¼ mile southwest of, sec. 19, T. 21 N., R. 7 E., Gem mine, Gem bed, 10 feet up chute 9, 42½-inch cut.

Grand Ridge, ¼ mile north of, SE. ¼ NW. ¼ sec. 26, T. 24 N., R. 6 E., Grand Ridge mine (220 feet north of rock tunnel, No. 1 bed, 83½ inches, 79-inch cut).

Same (north end of level 1, near rock tunnel, No. 2 bed, 4-foot cut).

Same (washed coal).

Issaquah, ¼ mile southwest of, SE. ¼ NE. ¼ sec. 33, T. 24 N., R. 6 E., Issaquah mine (50 feet down slope, No. 4 bed, 59 inches, 44-foot cut).

Same (688 feet in, No. 5 bed, 54½ inches, 47-inch cut).

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.					Calorific value.		Reference.		
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile car- ma- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.		British thermal units.	
WASHINGTON—Continued.																	
KING COUNTY—continued.																	
Issaquah—Continued. 1½ miles southwest of; SW. ¼ SE. ¼ sec. 32, T. 24 N., R. 6 E., Superior mine, No. 0 bed (60 feet from entrance, wet sample, 43½-inch bed, 38½-inch cut).	8547	B	1	12.41	29.68	41.82	16.09	1.61						5,480	9,864	850	
			2		33.87	47.76	18.37	1.84							6,257	11,263	
			3			41.50	58.50		2.25						7,665	13,797	
Same (900 feet from entrance, wet sample, 81½- inch bed, 79½-inch cut).	8548	B	1	12.8	28.5	43.6	15.11	.68	5.56	55.68	1.11	21.86	5.3	5,625	10,120	850	
			2		32.5	50.2	17.32	.78	4.75	63.83	1.27	12.05		6,445	11,010		
			3		39.5	60.5		.94	5.74	77.21	1.54	14.57		7,795	14,030		
3 miles north of; SW. ¼ SW. ¼ sec. 13, T. 24 N., R. 6 E., prospect, bottom of shaft, 73½-inch cut.	*9291	B	1	17.51	31.17	38.55	12.77	.37	5.85	52.11	1.03	27.82	9.7	5,184	9,331	851	
			2		37.79	46.73	15.48	.45	4.73	63.17	1.31	14.86		6,284	11,312		
			3		44.71	55.29		.53	5.60	74.74	1.55	17.58		7,434	13,381		
Kummer, SE. ¼ NE. ¼ sec. 26, T. 21 N., R. 6 E., Kummer mine (100 feet south of entrance, 49½- inch bed, 46½-inch cut).	*9115	B	1	12.35	30.41	34.83	22.41	.59					9.7	4,728	8,510	851	
			2		34.69	39.74	25.57	.67						5,394	9,709		
			3		46.01	53.39		.90						7,247	13,045		
Same (1,500 feet north of entrance, No. 1 bed, 50½ inches, 49½-inch cut).	*9113	B	1	14.15	29.87	47.06	8.92	.43	5.80	58.39	1.32	25.14	12.3	5,797	10,435	851	
			2		34.79	54.82	10.39	.50	4.93	68.01	1.54	14.63		6,752	12,154		
			3		38.82	61.18		.56	5.49	75.89	1.72	16.34		7,535	13,563		
Palmer Junction, NE. ¼ NE. ¼ sec. 14, T. 21 N., R. 7 E., Hudson prospect (lower bench, 1½-foot cut).	9482	B	1	4.76	23.67	39.15	32.42	.66					2.9	5,038	9,068	852	
			2		24.85	41.11	34.04	.69						5,200	9,522		
			3		37.06	62.34		1.05						8,020	14,435		
Same (upper 31½-inch bench, 24-inch cut).....	9288	B	1	4.41	24.98	37.26	33.35	.58					2.5	4,973	8,951	852	
			2		26.13	38.98	34.89	.61						5,202	9,361		
			3		40.13	59.87		.94						7,990	14,382		
Preston, 1 mile southwest of; sec. 31, T. 24 N., R. 7 E., prospect, 25 feet in, wet sample, 3-foot cut.	8546	B	1	5.48	7.32	30.52	56.68	3.30					4.0	2,711	4,886	853	
			2		7.74	32.30	59.96	8.72						2,808	5,162		
			3		19.33	80.67								7,163	12,893		
3 miles southwest of; 6 miles from Issaquah, SE. ¼ SW. ¼ sec. 12, T. 23 N., R. 6 E., surface prospect (main bed, upstream 4 feet, 46½-inch cut).	9290	B	1	11.39	27.39	50.47	10.75	.23					8.9	6,330	11,394	853	
			2		30.91	56.96	12.13	.26						7,143	12,857		
			3		35.18	64.82		.30						8,129	14,632		
Same (3½-foot bed, downstream, 25-inch cut)...	9289	B	1	12.54	28.01	45.54	13.91	2.37					8.5	5,702	10,264	853	
			2		32.03	52.07	15.90	2.71						6,520	11,736		
			3		38.08	61.92		3.22						7,752	13,954		

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.				Ultimate.				Calorific value.		Reference.		
	Laboratory No.	Kind.	Con- dition.	Mois- ture.	Vola- tile car- bon- at- er.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.	British thermal units.	Pago of this bulletin.
WASHINGTON—Continued.															
KING COUNTY—Continued.															
Renton, Renton mine—Continued.															
Same (pea coal).....	2687	C	1	16.04	31.39	41.04	11.53	0.61	5.57	56.51	1.16	24.62	5,521	9,938	332
			2	.....	37.39	48.88	13.73	.73	4.51	67.31	1.38	12.34	6,576	11,837	474
			3	.....	.....	.....	.....	.84	5.23	78.02	1.60	14.31	7,023	13,720	
			4	.....	43.34	56.66	.....	.....	5.28	78.68	1.62	14.42	7,068	13,802	
			1	14.30	33.03	41.30	11.37	.72	5.73	57.27	1.17	23.74	5,671	10,208	332
Same (run of mine).....	2686	C	2	.....	38.54	48.19	13.27	.84	4.83	66.83	1.37	12.86	6,617	11,911	474
			3	.....	44.44	55.56	.....	.97	5.57	77.05	1.57	14.84	7,630	13,734	
			4	.....	.....	.....	.....	.....	5.62	77.80	1.59	14.60	7,682	13,828	
			1	14.22	35.53	42.67	7.58	.68	5.89	59.25	1.38	25.22	5,803	10,553	857
Same (north end of gangway, level 9 north, No. 3 bed, lower bench, 32½-inch cut).	*9156	B	2	.....	41.42	49.74	8.84	.79	5.02	69.07	1.61	14.67	5,835	12,393	
			3	.....	45.44	54.56	.....	.87	5.51	75.77	1.77	16.08	7,498	13,496	
			1	14.73	33.19	47.49	11.59	.47	5.95	55.37	1.29	23.33	5,483	9,868	474
Same (position and bed same as #156, upper bench 54 inches, 46-inch cut).	*9157	B	2	.....	38.92	47.49	13.59	.55	5.03	64.93	1.51	14.37	6,430	11,574	
			3	.....	43.94	54.96	.....	.84	5.84	75.14	1.75	16.63	7,441	13,394	
Same (level 5 south, 140 feet up plane 1 north, No. 2 bed, 100½ inches, 3½-foot cut).	*9158	B	3	14.52	31.92	38.81	14.85	.68	4.69	53.24	1.18	24.45	5,185	9,333	474
			1	.....	37.22	45.41	17.37	.89	4.69	62.29	1.37	13.49	6,066	10,919	
			2	.....	43.03	53.97	.....	.97	5.67	75.39	1.66	16.33	7,144	13,213	
			3	14.63	33.98	41.46	9.93	.44	.....	.....	.....	.....	5,598	10,074	474
Same (level 7, 500 feet north of main slope, No. 3 bed, upper bench 54 inches, 4½-foot cut).	*9159	B	3	.....	39.60	48.57	11.63	.52	.....	.....	.....	.....	6,557	11,803	
			1	.....	46.04	54.96	.....	.59	.....	.....	.....	.....	7,420	13,356	
			2	.....	42.07	42.02	7.49	.60	.....	.....	.....	.....	8.1	10,577	474
Same (position same as #159, lower bench of No. 3 bed, 31-inch cut).	*9160	B	3	14.42	36.07	42.02	8.75	.70	.....	.....	.....	.....	6,876	12,357	
			1	.....	42.15	49.10	.....	.....	.....	.....	.....	.....	6,865	12,357	
			2	.....	46.19	53.81	.....	.77	.....	.....	.....	.....	7,323	13,541	
Same (600 feet above level 6 south, plane 6 of new workings, No. 3 bed, upper bench 58 inches, 4½-foot cut).	*9161	B	3	16.27	31.91	43.40	8.42	.37	6.20	57.11	1.27	26.63	5,614	10,105	474
			1	.....	38.11	51.83	10.06	.44	5.24	68.21	1.52	14.53	6,705	12,069	
			2	.....	42.37	57.63	.....	.49	5.83	75.84	1.69	16.15	7,455	13,419	
Same (position and bed same as #161, lower bench 3 feet, 2½-foot cut).	*9162	B	3	15.00	35.39	43.84	5.77	.54	6.16	59.73	1.37	26.43	5,974	10,753	474
			1	.....	41.64	51.57	6.79	.64	5.28	70.27	1.61	15.41	7,028	12,650	
			2	.....	44.67	55.33	.....	.69	5.66	75.39	1.73	16.33	7,540	13,572	
			3	.....	32.13	39.44	12.16	.48	4.77	53.58	1.33	26.78	5,228	9,410	859
T. 23 N., R. 5 E., Denny-Renton mine, gangway, No. 1 bed (300 feet north of south line of sec. 17, upper bench 27 inches, 26-inch cut).	*9154	B	2	16.27	32.13	37.44	14.52	.57	4.73	63.99	1.59	14.60	6,244	11,239	474
			3	.....	38.37	47.11	.....	.67	5.53	74.86	1.86	17.08	7,305	13,149	

Same (part taken 540 feet south by 160 feet west and part taken 120 feet south of north quarter corner sec. 20, lower bench, 83½ inches, 4½-foot cut).	B	9155	1	16.79	32.23	39.12	11.86	.43	5.22	53.80	1.28	26.91	8.9	5.215	9.387	474	885
Snoqualmie , 1½ miles southwest of; Niblock mine (No. 3 bed, 25 feet cut, about 500 feet from mine entrance, 48-inch cut).	B	10031	1	8.23	27.18	53.90	10.69	.47	5.22	69.64	1.84	12.14	7.3	6.912	12.442	474	890
Same (No. 4 bed, left of rock tunnel, 800 feet from entrance to No. 5 bed, 38-inch cut).	B	10032	1	6.09	22.69	38.81	12.41	.88	5.31	75.89	2.01	5.25	4.1	7.532	13.558	474	890
	B	10033	1	4.85	27.84	43.56	24.34	1.48	4.92	57.56	1.38	10.02	3.7	5.876	10.577	474	890
Same (No. 5 bed, gateway at end of entrance tunnel to No. 5 bed, 160 feet from entrance, 60-inch cut).	A	520b	1	6.16	39.98	37.78	16.08	1.08	6.18	60.81	1.45	8.06	3.5	6.176	11.117	474	890
Taylor , sec. 3, T. 22 N., R. 7 E., Denny-Renton mine, chute 4, 3,000 feet northeast of opening (No. 5 bed, 35-inch cut).	B	9172	1	4.76	36.45	48.74	10.05	.81	5.37	68.09	1.35	14.33	2.6	6.892	12.405	474	861
Same (chute 29, east gateway, No. 4 bed, 32½-inch cut).	B	9173	1	6.37	36.68	41.47	15.48	1.33	5.09	71.49	1.42	10.60	4.0	8.090	14.562	474	861
Same (in small crosscut, No. 2 bed, 44½-inch cut).	B	9174	1	4.30	35.60	45.25	14.85	1.70	5.20	65.14	1.60	12.47	2.3	7.921	14.258	474	861
Same (chute 27, about 45 feet above east gateway, No. 5 bed, 49 inches, 46-inch cut).	B	9175	1	5.6	36.0	44.0	14.4	.94	4.93	68.06	1.67	9.05	3.1	8.155	14.679	474	861
Same (chute 5, about 25 feet above east gateway, No. 6 bed, 56½ inches, 55½-inch cut).	B	9176	1	4.08	37.41	45.39	17.20	.55	5.18	63.91	1.26	14.33	3.1	6.415	11.550	474	861
Same (50 feet west of position of 9173, No. 3 bed, 45½ inches, 41-inch cut).	B	518b	1	4.04	35.12	34.04	24.90	1.92	4.83	67.67	1.33	9.94	2.6	8.015	14.430	474	861
Same (2,400 feet northeast of drift mouth, No. 5 bed, 46-inch bed, 43½-inch cut).	A	519b	1	5.36	37.08	48.33	8.61	.63	5.70	79.53	1.57	11.72	2.2	5.557	10.093	474	861
Same (No. 4 bed, 1,500 feet northeast of drift mouth, 27½-inch cut).	C	588b	1	6.20	34.20	41.37	18.23	.73	4.95	60.12	1.41	14.00	2.6	6.049	10.888	474	861
Same (No. 4 bed).....	C	589b	1	3.3	36.46	44.10	19.44	.74	4.54	64.09	1.50	9.69	2.3	6.484	11.606	474	861
Same (No. 5 bed).....	C	9411	1	3.62	35.14	50.51	10.73	.32	5.04	79.55	1.86	12.03	2.4	8.004	14.406	474	863
Same (No. 5 bed).....	C	9412	1	3.62	35.14	50.51	10.73	.32	4.72	56.98	1.37	13.49	2.3	5.728	10.310	474	863
Same (No. 5 bed).....	C	9413	1	3.62	35.14	50.51	10.73	.32	4.36	60.20	1.45	9.23	2.4	6.052	10.894	474	863
Same (No. 5 bed).....	C	9414	1	3.62	35.14	50.51	10.73	.32	5.73	79.16	1.91	12.14	2.4	7.957	14.324	474	863
KITITAS COUNTY.																	
Beckman , SW. ¼ NW. ¼ sec. 12, T. 20 N., R. 14 E., 3 miles northwest of Roslyn, Beckman mine, Roslyn bed (through 12½-inch screen, from car).	C	9410	1	4.37	33.21	49.48	12.94	.35	5.46	69.83	1.56	9.86	2.7	6.958	12.524	474	863
Same (gangway level 2 west, between rooms 26 and 27, 61 inches, 53½-inch cut).	B	9411	1	3.62	35.14	50.51	10.73	.32	5.20	73.02	1.63	6.25	2.4	7.276	13.097	474	863
	B	9412	1	3.62	35.14	50.51	10.73	.32	6.01	84.45	1.89	7.22	2.4	8.415	15.147	474	863

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.		Reference.				
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- rics.	British thermal units.	Bul- letin No.	Pago of this bullet- tin.	
WASHINGTON—Continued.																		
KITITAS COUNTY—continued.																		
Bookman, Beekman mine—Continued.																		
Same (end of gangway, level 2 east, 53½ inches, 53½-inch cut).	9412	B	1	3.53	34.62	50.20	11.65	0.38					1.8				474	863
			2		35.89	52.04	12.07	.39										
			3		40.82	50.18		.44										
Same (gangway, level 3 west, between rooms 17 and 18, 53½ inches, 57½-inch cut).	9414	B	1	2.49	34.90	49.97	12.64	.33					1.0				474	863
			2		35.79	51.25	12.96	.34										
			3		41.12	48.88		.39										
Same (foot of slope, 250 feet below level 4 gangway, 61-inch cut).	9415	B	1	2.57	34.69	48.89	13.85	.34					.8				474	863
			2		35.61	50.18	14.21	.35										
			3		41.51	48.49		.41										
Same (150 feet beyond room 21, gangway of level 3 east, 53½ inches, 52½-inch cut).	9413	B	1	3.38	35.53	49.82	11.27	.37					1.8				474	863
			2		36.77	51.56	11.67	.38										
			3		41.63	48.37		.43										
Same (composite of Nos. 9411-9415).....	9459	B	1	3.33	34.07	50.45	12.15	.35	5.61	70.67	1.65	9.57	1.8	7,173	12,911	474	863	
			2		35.24	52.19	12.57	.36	5.42	73.10	1.71	6.84		7,420	13,356			
			3		40.30	59.70		.41	6.20	83.60	1.96	7.83		8,457	15,277			
Same (main slope, 1,000 feet southwest, 4½ feet, 4½-foot cut).	550b	A	1	3.46	38.42	48.30	9.82	.41					1.9	7,347	13,225	474	863	
			2		39.82	50.01	10.17	.43						7,610	13,698	5		
			3		44.33	55.67		.48						8,472	15,250			
Same (1,300 feet southwest of opening, rib on second west, 57-inch cut).	551b	A	1	8.99	36.23	46.04	8.74	.35					7.6			474	863	
			2		38.81	50.59	9.60	.39										
			3		44.04	55.96		.43										
1 mile northwest of; sec. 11, T. 20 N., R. 14 E., Lakedale mine, 150 feet in, 43-inch bed, 36½-inch cut.	9405	B	1	4.45	29.52	44.55	21.48	.45	5.02	61.45	1.18	10.52	2.5	6,233	11,219	474	864	
			2		30.90	46.62	22.48	.37	4.74	64.31	1.23	6.87		6,523	11,741			
			3		39.86	60.14		.48	6.11	82.96	1.59	8.86		8,415	15,147			
1½ mile northwest of; sec. 2, T. 20 N., R. 14 E., prospect, 25 feet in, 14½-inch cut.	9404	B	1	5.28	27.53	42.57	24.62	.38					4.1	5,899	10,546	474	865	
			2		29.05	44.95	25.99	.40						6,185	11,133			
			3		39.27	60.73		.54						8,357	15,043			
Same (run of mine)	693b	C	1	7.82	33.06	44.94	14.18	.45	5.48	64.67	1.41	13.81	5.8	6,613	11,903	474	.....
			2		35.89	48.73	15.38	.49	5.00	70.16	1.53	7.44		7,174	12,913	5		
			3		42.41	57.59		.58	5.91	82.91	1.80	8.80		8,477	15,259			
Same (screenings through ½-inch screen).....	694b	C	1	2.32	37.02	47.08	13.58	.60	4.67	66.77	.61	13.77		9,913	12,443	474	.....
			2		37.90	48.20	13.90	.61	4.51	68.36	.62	12.00		7,078	12,740	5		
			3		44.01	55.99		.72	5.23	79.40	.72	13.93		8,220	14,796			

	B	1	2	3	7.47	35.18	44.12	13.23	42		2.3		474	865
Clealum, sec. 25, T. 20 N., R. 15 E., Cle Elum No. 1 mine, Roslyn bed (gangway, level 1 southwest, 100 feet from slope, 53 inches, 50½-inch cut).	B	1	2	3	7.47	35.18	44.12	13.23	42				474	865
Same (east end of gangway, level 1 southeast, 49½ inches, 48½-inch cut).	B	1	2	3	9.94	33.50	44.74	11.82	53		5.1		474	865
Same (gangway, level 1 southwest, between rooms 32 and 33, 4½ feet, 51½-inch cut).	B	1	2	3	6.62	35.87	44.41	13.10	35		2.7		474	865
Same (composite of Nos. 9445, 9446, and 9447)...	B	1	2	3	44.68	38.41	47.56	14.03	37				474	865
Half mile north of; Cle Elum No. 2 mine ^a (gangway, level 6 east, 49 inches, 44½-inch cut).	B	1	2	3	7.90	34.62	44.80	12.68	43		3.4		474	865
1 mile north of; Cle Elum No. 2 Extension mine ^a (gangway, level 8 east, 50 feet from rope slope, 4½ feet, middle bench excluded, 52½-inch cut).	B	1	2	3	37.59	48.64	13.77	47	43	5.76	62.84	1.31	16.98	6.341
Sec. 23, T. 20 N., R. 15 E., Cle Elum No. 3 Extension mine ^a (air course parallel to incline, just below level 6, 52½ inches, 43-foot cut).	B	1	2	3	8.00	34.50	46.41	12.04	54	6.15	79.13	1.65	12.53	6.885
Half mile northwest of; sec. 22, T. 20 N., R. 15 E., 2½ miles southeast of Roslyn, Roslyn No. 7 mine, Roslyn bed (level 4 east, 330 feet beyond entrance to room 12, 52½ inches, 51½-inch cut).	B	1	2	3	8.49	35.02	44.55	11.94	58	5.02	69.17	1.51	10.72	7.959
Same (air course below gangway, level 4 west, 800 feet west of slope, 53½ inches, 55½-inch cut).	B	1	2	3	8.52	34.88	44.45	12.15	54	5.78	79.59	1.43	17.33	6.351
Same (gangway, level 2 east, 15 feet from barrier, 50½ inches, 53½-inch cut).	B	1	2	3	5.99	34.94	47.16	11.91	34	5.01	68.52	1.62	11.08	7.982
Same (room 40, level 2 west, 54½ inches, 53-inch cut).	B	1	2	3	42.56	37.17	50.10	12.67	36	5.78	79.01	1.87	12.75	6.940
Same (composite of Nos. 9419-9422).....	B	1	2	3	6.30	35.77	46.33	11.60	35					7.303
1 mile north of; sec. 14, T. 20 N., R. 15 E., Summit mine (50 feet down shaft from new tunnel, Roslyn bed, 4½ feet, 52-inch cut).	B	1	2	3	38.18	49.44	12.38	37	41					6.800
Roslyn, sec. 20, T. 20 N., R. 15 E., Roslyn No. 2 slope mine, Roslyn bed (250 feet up room 7, block 2, 55-inch cut).	B	1	2	3	7.01	34.09	44.88	13.62	37		2.0			7.945
Same (level 6 west, beside barrier pillar, 54½ inches, 53½-inch cut).	B	1	2	3	5.54	36.21	46.47	11.78	33		1.5			6.610
Same (level 6 west, beside barrier pillar, 54½ inches, 53½-inch cut).	B	1	2	3	4.98	38.79	58.21	12.13	40	5.60	66.00	1.29	14.60	6.396
Same (level 6 west, gateway between rooms 2 and 3, 54½ inches, 53-inch cut).	B	1	2	3	7.66	33.17	46.47	12.01	38	5.31	69.46	1.36	10.70	7.376
Same (10 feet below air course below level 8, 50½ inches, 49½-inch cut).	B	1	2	3	2.93	36.73	48.73	12.59	37	5.63	63.88	1.32	16.70	6.432
	B	1	2	3	3.37	34.62	50.52	11.49	36	5.20	69.18	1.43	10.70	6.966
	B	1	2	3	3.34	40.66	59.34	12.26	42	5.38	79.53	1.64	12.30	8.008
	B	1	2	3	3.08	37.19	50.13	12.68	38					
	B	1	2	3	42.98	37.08	49.20	13.72	32					

a Roslyn bed.

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.		Reference.			
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile car- bon.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.	British thermal units.	Bul- letin No.	
WASHINGTON—Continued.																	
KITITAS COUNTY—continued.																	
Roslyn, Roslyn No. 2 mine—Continued.	9464	.....	1	3.16	35.60	48.77	12.47	0.35	5.47	69.08	1.53	11.10	1.4	7,025	12,045	869
Same (composite of Nos. 9433-9436)			2	.....	36.76	50.36	12.88	.36	5.29	71.33	1.58	8.56	7,254	13,056		474
			3	.....	42.20	57.80	12.88	.41	6.07	81.87	1.81	9.84	8,325	14,985		474
Sec. 20, T. 20 N., R. 15 E., Roslyn No. 4 mine, Roslyn bed (gangway of level 11 west, block 2, 60½ inches, 58½-inch cut).	9438	B	1	3.75	33.80	47.95	14.50	.35	.....	.....	.....	.....	.....	.....	.....	869
Same (gangway of level 11 east, between rooms 3 and 4, 60½ inches, 56½-inch cut).			2	.....	35.12	49.82	15.06	.36	.....	.....	.....	.....	.....	.....	.....
			3	.....	41.35	58.65	14.50	.42	.....	.....	.....	.....	.....	.....	.....
Sec. 20, T. 20 N., R. 15 E., Roslyn No. 4 mine, Roslyn bed (gangway of level 11 east, between rooms 3 and 4, 60½ inches, 56½-inch cut).	9437	B	1	3.66	35.85	48.21	12.28	.37	.....	.....	.....	.....	.....	.....	.....	869
Same (composite of Nos. 9437 and 9438)			2	.....	37.21	50.04	12.75	.38	.....	.....	.....	.....	.....	.....	.....
			3	.....	42.65	57.35	12.75	.44	.....	.....	.....	.....	.....	.....	.....
Sec. 20, T. 20 N., R. 15 E., Roslyn No. 2 mine, Roslyn bed (level 8, 15 feet west of east rope slope, 49½ inches, 47½-inch cut).	9465	.....	1	3.68	34.33	48.59	13.40	.36	5.43	67.57	1.28	11.96	1.8	6,807	12,253	869
Same (composite of Nos. 9437 and 9438)			2	.....	35.64	50.45	13.91	.37	5.21	70.15	1.33	9.03	7,067	12,721		474
			3	.....	41.40	58.60	13.91	.33	6.05	81.49	1.54	10.49	8,209	14,776		869
Sec. 20, T. 20 N., R. 15 E., Roslyn No. 2 mine, Roslyn bed (level 8, 15 feet west of east rope slope, 49½ inches, 47½-inch cut).	2458	A	1	3.39	37.34	48.88	10.39	.33	.....	.....	.....	.....	.....	.....	.....	869
Same (level 7 west, entrance to room 80, 52½-inch cut).			2	.....	38.65	50.60	10.75	.34	.....	.....	.....	.....	.....	.....	.....
			3	43.30	56.70	10.75	.38	870
One-fourth mile northeast of; sec. 9, T. 20 N., R. 15 E., Roslyn No. 2 mine, Roslyn bed (level 8, 15 feet west of east rope slope, 49½ inches, 47½-inch cut).	9442	B	1	4.47	36.98	46.54	12.01	.42	.....	.....	.....	.....	.....	.....	.....	870
Same (level 7 west, entrance to room 80, 52½-inch cut).			2	.....	38.71	48.72	12.57	.44	.....	.....	.....	.....	.....	.....	.....
			3	44.28	55.72	12.57	.50	474
Sec. 20, T. 20 N., R. 15 E., Roslyn No. 2 mine, Roslyn bed (level 8, 15 feet west of east rope slope, 49½ inches, 47½-inch cut).	9443	B	1	4.42	35.41	47.15	13.02	.41	.....	.....	.....	.....	.....	.....	.....	870
Same (level 7 west, entrance to room 80, 52½-inch cut).			2	37.05	49.33	13.62	.43	474
			3	42.89	57.11	13.62	.43	
Sec. 20, T. 20 N., R. 15 E., Roslyn No. 2 mine, Roslyn bed (level 8, 15 feet west of east rope slope, 49½ inches, 47½-inch cut).	9444	B	1	5.41	36.50	46.16	11.93	.39	.....	.....	.....	.....	.....	.....	.....	870
Same (level 10 east, 75 feet beyond room 43, 52½ inches, 51½-inch cut).			2	38.59	48.50	12.61	.41	474
			3	44.19	55.84	12.61	.47	
Sec. 20, T. 20 N., R. 15 E., Roslyn No. 2 mine, Roslyn bed (level 8, 15 feet west of east rope slope, 49½ inches, 47½-inch cut).	2457	A	1	3.36	36.15	46.58	13.91	.36	.....	.....	.....	.....	.....	.....	.....	870
Same (about 6,000 feet from mouth of mine, 48½-inch cut).			2	37.41	48.20	14.39	.37	332
			3	43.70	56.30	14.39	.43	113
Sec. 20, T. 20 N., R. 15 E., Roslyn No. 2 mine, Roslyn bed (level 8, 15 feet west of east rope slope, 49½ inches, 47½-inch cut).	9408	.....	1	4.66	36.02	46.86	12.46	.38	5.87	66.88	1.34	13.09	2.0	6,801	12,242	870
Same (composite of Nos. 9442, 9443, and 9444)			2	.....	37.77	49.16	13.07	.40	5.61	70.13	1.41	9.38	7,134	12,841		474
			3	.....	43.45	56.55	12.59	.46	6.45	80.67	1.62	10.80	8,266	14,771		474
Three-fourths mile southeast of; sec. 16, T. 20 N., R. 15 E., Roslyn No. 6 mine, Roslyn bed (east end of level 7, 55 inches, 53½-inch cut).	9441	B	1	4.50	36.38	46.53	12.59	.42	.....	.....	.....	.....	.....	.....	.....	871
Same (composite of Nos. 9442, 9443, and 9444)			2	38.09	48.73	13.18	.44	
			3	43.87	56.13	13.18	.51	

Same (east end of level 5, 57½ inches, 54½-inch cut).	9440	B	1	4.84	37.25	45.57	12.34	38	.....	2.1	.....	474	871
Same (level 7, stump pillar between rooms 1 and 2, 54½ inches, 52-inch cut).	9439	B	2	4.45	36.73	45.03	12.46	40	.....	1.9	.....	474	871
Same (composite of Nos. 9439, 9440, and 9441).	9466	.....	3	4.45	38.44	48.32	13.04	43	.....	.....	.....	474	871
1 mile northeast of sec. 10, T. 20 N., R. 15 E., A. & E. mine, 160 feet up room 9, Roslyn bed (52½ inches, 51½-inch cut).	9402	B	1	4.65	36.07	46.75	12.53	49	6.37	1.30	12.98	474	871
1½ miles southeast of sec. 22, T. 20 N., R. 15 E., Roslyn No. 5 mine, Roslyn bed (barrier pillar, 10 feet above level 2 gangway, 4½ feet, 50½-inch cut).	9423	B	2	5.70	36.95	54.45	12.69	48	5.09	1.36	9.28	474	871
Same (level 3 west, entrance to room 50, 63½ inches, 62½-inch cut).	9424	B	3	5.70	39.18	47.36	13.46	48	5.86	81.41	1.57	474	871
Same (air course below level 4, about 30 feet west of slope, 53½ inches, 53½-inch cut).	9425	B	1	5.43	35.68	46.92	11.97	36	5.47	65.55	1.28	474	872
Same (gangway 3 east, entrance to room 42, 56½ inches, 53½-inch cut).	9426	B	2	5.43	37.72	49.62	12.66	38	5.93	80.32	1.57	474	872
Same (barrier pillar, gangway of level 1 west, 56½ inches, 53½-inch cut).	9427	B	3	4.21	35.32	47.16	13.31	37	.....	1.6	.....	474	872
Same (composite of Nos. 9423-9427).	9402	B	1	4.95	37.83	49.79	12.38	42	.....	1.4	.....	474	872
2½ miles northwest of sec. 6, T. 20 N., R. 15 E., Patrick-McKay mine, Roslyn bed (50 feet above level 1 east, 48½ inches, 47½-inch cut).	9416	B	2	3.02	36.96	49.56	10.46	38	5.54	1.27	13.34	474	872
Same (end of gangway, level 1 east, about 1,000 feet from rock tunnel, 50½ inches, 49½-inch cut).	9417	B	3	4.22	37.17	50.48	12.35	38	5.25	71.21	1.34	474	872
Same (level 1 west, entrance to room 18, 54½ inches, 53½-inch cut).	9418	B	1	3.26	35.96	48.83	11.95	37	5.99	81.27	1.53	474	873
Same (composite of Nos. 9416-9418).	9460	.....	2	3.08	36.73	51.04	11.27	41	.....	1.1	.....	474	873
Same (34½-inch cut); lower bed (40½ inches).	9407	B	3	4.10	33.01	48.46	16.43	48	5.63	70.18	1.44	474	873
Same (lump coal).	3098	C	1	41.53	58.47	17.13	1.00	83	5.46	72.41	1.49	474	873
1½ miles west of sec. 7, T. 20 N., R. 15 E., Roslyn No. 3 mine, Roslyn bed (entrance to room 48, 4½ feet, 50-inch cut).	9428	B	2	3.16	36.49	48.09	12.26	39	6.29	65.03	1.21	474	873
.....	.....	.....	3	37.68	49.66	12.66	.....	45	5.04	67.87	1.26	474	873
.....	.....	.....	4	36.34	49.53	10.71	.....	40	6.07	81.90	1.52	332	.....
.....	.....	.....	1	3.42	36.34	49.53	10.71	40	6.15	69.35	1.24	.....	.....
.....	.....	.....	2	43.32	57.68	.....	.....	45	3.40	71.62	1.28	.....	.....
.....	.....	.....	3	.....	.....	.....	.....	45	5.68	81.99	1.47	474	874
.....	.....	.....	4	.....	.....	.....	.....	40	5.70	82.88	1.47	474	874

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.					Calorific value.		Reference.				
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.		British thermal units.	Bul- letin No.	Page of this bulle- tin.	
WASHINGTON—Continued.																			
KITITAS COUNTY—continued.																			
Rocklyn, Rocklyn No. 3 mine—Continued. Same (level 6 gangway, between rooms 6 and 7, 50 inches, 48½-inch cut).	9429	B	1	3.21	36.51	49.19	11.09	0.37						1.1			474	874	
			2		37.72	50.82	11.46	.38											
			3		42.60	57.40		.43											
Same (150 feet up slope from base of shaft, 52½ inches, 51½-inch cut).	9430	B	1	3.33	33.21	51.48	10.38	.33						1.1			474	874	
			2		36.42	52.84	10.74	.34											
			3		40.80	59.20		.38											
Same (room 12, battery 3, level 1 west, 100 feet from gangway, 62 inches, 61½-inch cut).	9431	B	1	3.18	36.09	46.69	14.04	.39						1.0			474	874	
			2		37.28	48.22	14.50	.40											
			3		43.60	56.40		.47											
Same (room 3, battery 4, level 1 west, 150 feet from gangway, 49½ inches, 48½-inch cut).	9432	B	1	3.14	36.42	49.81	10.63	.33						1.0			474	874	
			2		37.62	51.42	10.98	.34											
			3		42.24	57.76		.38											
Same (composite of Nos. 9428-9432).....	9463		1	3.08	35.60	49.95	11.37	.40	5.53	70.29	1.54	10.87	1.1	7,146	12,863		474	874	
			2		36.73	51.54	11.73	.41	5.36	72.53	1.59	8.38		7,373	13,271				
			3		41.61	58.30		.46	6.07	82.17	1.80	9.51		8,352	15,034				
2½ miles west of, Busy Bee mine, 4½-foot bed, 37½- inch cut.	9406	B	1	3.30	36.22	51.54	8.94	.41						1.4	7,430	13,374	474	875	
			2		37.46	53.30	9.24	.42								7,683	13,829		
			3		41.27	58.73		.46								8,465	15,237		
LEWIS COUNTY.																			
Centralia, 1½ miles northeast of; SW. ¼ sec. 34, T. 14 S., R. 2 W., Richmond mine, Potlatch bed, 600 feet in 92½-inch cut.	*9177	B	1	26.71	32.79	32.09	8.41	1.52	6.60	45.85	.79	36.83	14.9	4,459	8,026		474	876	
			2		44.74	43.79	11.47	2.07	4.95	62.56	1.08	17.87		6,984	10,951				
			3		50.54	49.46		2.34	5.59	70.08	1.22	20.17		6,872	12,370				
Chehalis, 1 mile northeast; Superior mine No. 1, 10 feet east of rock tunnel to bed, 82-inch cut.	*9942	B	1	27.17	33.80	28.11	10.92	.33	6.27	43.88	.80	37.80	14.3	4,205	7,569		474	876	
			2		46.41	38.60	14.99	.45	4.46	60.25	1.10	18.75		5,774	10,393				
			3		54.59	45.41		.53	5.25	70.87	1.29	22.06		6,792	12,226				
½ mile up track from depot and to the north; Super- ior mine No. 2, 50 feet up No. 5 chute, 11½-inch cut.	*9941	B	1	30.50	34.94	29.61	4.95	1.25	6.89	45.48	.75	40.08	17.1	4,408	7,934		474	877	
			2		50.28	42.60	7.12	1.80	5.04	65.44	1.08	19.82		6,343	11,417				
			3		54.14	45.86		1.94	5.43	70.46	1.16	21.01		6,880	12,284				

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.		Reference.		
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.		Calo- ries.	British thermal units.
WASHINGTON—Continued.																
LEWIS COUNTY—continued.																
Longmire Springs, 12 miles east of; SE. $\frac{1}{4}$ sec. 1, T. 14 N., R. 10 E., Weikel mine, 90 feet in, No. 6 bed, 3 $\frac{1}{2}$ -foot cut.	9091	B	1	4.2	10.5	51.2	34.05	0.48	3.08	53.61	0.87	7.91	3.5	4,935	8,885	882
			2	.....	11.0	53.4	35.56	.50	2.73	55.97	.91	4.33		5,155	9,275	
			3	17.0	83.0		.78		4.24	86.85	1.41	6.72	2.1	8,000	14,400	883
Same, surface prospect, No. 4 bed, 1-foot cut.	9092	B	1	2.9	8.5	82.0	6.6	.80						7,640	13,750	
			2	.....	9.0	84.2	6.8	.85						7,870	14,170	
			3	9.5	90.5								3.7	8,440	15,200	883
12 miles east of; SE. $\frac{1}{4}$ NW. $\frac{1}{4}$ sec. 13, T. 14 N., R. 10 E., Davis prospect, No. 6 (or Primrose) bed (middle bench, 1 $\frac{1}{2}$ -inch cut).	9097	B	1	5.1	8.5	36.7	49.7	1.00						3,325	5,985	
			2	.....	9.0	38.6	52.4	1.05						3.505	6,310	
			3	19.0	81.0		2.20		3.35	71.41	1.30	5.86	3.1	7,370	13,200	883
Same (lower bench, 3 $\frac{1}{2}$ -inch cut).	9099	B	1	3.9	7.4	71.2	17.53	.55	3.03	74.33	1.35	2.47		6,885	12,390	
			2	.....	7.5	74.5	18.25	.57	3.71	90.92	1.65	3.02		8,420	15,150	
			3	.....	9.5	90.5		.70	3.48	79.92	1.32	4.69	2.0	7,620	13,350	883
Same (best coal of lower bench, 6-inch cut)....	9100	B	1	2.7	7.0	74.6	10.07	.62	3.27	81.39	1.36	2.38		8,060	15,410	
			2	.....	8.5	91.5	10.96	.72	3.67	91.41	1.53	2.67		8,580	15,410	
			3	8.5	92.5				2.87	62.23	1.03	3.73	2.8	5,790	10,045	883
Same (upper bench, 32 $\frac{1}{2}$ -inch cut).....	9101	B	1	3.6	8.5	50.5	28.40	.65	3.17	60.00	1.99	6.78		8,205	14,770	
			2	.....	12.5	87.5		.96	4.07	88.20	1.46	5.31	3.0	4,820	8,555	883
			3	.....	8.5	52.2	35.4							5,015	9,030	
Same (bony layer above lower bench, 25-inch cut).	9102	B	1	3.9	8.5	54.2	36.9	.70						7,045	14,310	
			2	.....	14.0	86.0		1.10						7,945	14,310	883
			3	.....	7.5	47.6	41.74	.73	2.64	47.64	.87	6.99	2.9	4,440	7,990	883
Same, Summit Creek prospect, 35 feet in gangway, 33 $\frac{1}{2}$ -inch cut.	9098	B	1	3.7	7.5	49.8	42.76	.70	2.31	49.47	.91	3.84		4,610	8,300	
			2	.....	13.5	86.5		1.27	4.03	86.39	1.59	6.72		5,050	14,490	
			3	.....	33.46	33.68	12.31	1.28	6.24	48.91	1.82	30.14	11.5	4,828	8,690	884
Mendota, sec. 3, T. 14 N., R. 1 W., Mendota mine (80 feet from level 1 north, room 2, 11 $\frac{1}{2}$ -inch cut).	*10324	B	1	20.55	33.46	33.68	12.31	1.61	4.98	61.56	1.03	13.53		6,077	10,939	
			2	.....	42.12	42.39	15.49	1.91	5.89	72.84	1.22	18.14		7,191	12,944	
			3	.....	49.84	50.16		1.91	5.89	72.84	1.22	18.14		7,191	12,944	884
Same (foot of slope, 850 feet from portal, 118 $\frac{1}{2}$ -inch cut).	*10323	B	1	19.25	33.84	34.29	12.62	1.17	5.99	50.00	.83	29.39	9.6	4,918	8,862	
			2	.....	41.91	42.46	15.63	1.45	4.77	61.92	1.03	13.20		6,090	10,962	
			3	.....	49.67	50.33		1.72	5.65	73.37	1.22	18.04		7,218	12,992	885
Sulphur Springs, 6 miles east of; SE. $\frac{1}{4}$ sec. 7, T. 13 N., R. 10 E., 2 miles east of Cowitz River, Barnett surface prospect (3-foot cut).	9090	B	1	7.4	5.0	51.8	35.8	.75						4,555	8,200	
			2	.....	5.0	56.4	38.6	.80						4,820	8,890	
			3	8.5	91.5		1.30						5.6	5,010	14,420	885

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.		Reference.		
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.		Calo- ries.	British thermal units.
WASHINGTON—Continued.																
PIERCE COUNTY—continued.																
Carbonado, Carbon Hill mines—Continued.	9560	B	1	2.74	30.31	52.83	8.12	0.49	5.80	74.07	2.10	9.42	1.5	7,521	13,538	890
			2	.....	37.33	51.32	8.35	.50	5.56	76.16	2.16	7.17	.....	.....	7,733	13,919
Same (samples from north and south ends of level 3 gangway mixed, Wingate bed, 54-inch cut).	9562	B	1	3.19	34.84	51.54	10.43	.55	6.18	83.10	2.36	7.81	.....	8,437	15,187	890
			2	.....	40.73	50.97	10.33	.32	5.48	72.54	1.89	9.34	2.0	7,340	13,212	
Same (200 feet up chute 14, No. 4 bed, 82½ inches, 64½-inch cut).	9563	C	1	.....	35.99	53.24	10.77	.33	5.30	74.93	1.95	6.72	.....	7,582	13,648	890
			2	.....	30.35	59.67	.....	.37	5.94	83.97	2.10	7.53	.....	.....	8,497	15,295
Same (over 3-inch bar screen, Wingate bed)....	9564	B	1	3.07	37.17	51.81	7.95	.44	.....	.....	.....	.....	1.8	7,553	13,595	890
			2	.....	38.35	53.45	8.20	.45	.....	.....	.....	.....	.....	.....	7,702	14,026
Same (end of gangway on water level 3,200 feet south of portal, No. 5 bed, 48½-inch cut).	9565	C	1	.....	41.77	58.23	16.38	.49	.....	.....	.....	.....	.....	8,488	15,278	890
			2	.....	30.84	52.17	16.99	.58	4.71	67.96	2.18	7.58	.....	.....	6,504	11,707
Same (lump, from car, Wingate bed).....	9566	B	1	3.60	29.73	50.29	10.38	.56	5.67	81.87	2.03	9.13	.....	6,747	12,145	890
			2	.....	37.15	62.85	.....	.70	5.32	71.46	1.97	9.82	1.7	8,128	14,630	
Same (end of rock tunnel, No. 1 coking bed, 29 inches, 2½-foot cut).	9569	B	1	3.18	34.52	51.56	10.74	.69	5.73	73.80	2.03	7.24	.....	8,128	13,052	890
			2	.....	35.65	53.26	11.09	.71	5.13	73.80	2.08	7.24	.....	.....	7,480	13,480
Same (40 feet above gangway, 500 feet from entrance, No. 11 bed, 53 inches, 37½-inch cut).	9570	B	1	.....	40.10	59.90	.....	.80	5.77	83.00	2.28	8.15	.....	8,423	15,161	888
			2	.....	28.07	50.77	18.33	3.22	4.78	65.62	1.89	6.16	2.2	6,686	12,037	
Same (Douty lump from bins and cars, still moist).	9571	C	1	2.53	28.89	52.25	18.86	3.31	4.59	67.53	1.94	3.77	.....	6,881	12,386	890
			2	.....	35.60	64.40	.....	.39	5.66	83.22	2.39	4.65	.....	.....	8,470	15,262
Same (level 1, 100 feet up chute 13, 600 feet north of bottom of electric slope, No. 1 bed, 88 inches, 77-inch cut).	9572	B	1	4.45	28.45	47.59	19.51	.38	4.85	62.34	1.78	11.13	2.7	6,201	11,270	890
			2	.....	29.78	49.80	20.42	.41	4.56	65.25	1.86	7.50	.....	.....	6,553	11,795
Same (cresscut 10 between chutes 56 and 57, level 2, Wingate bed, 49-inch cut).	9573	B	1	3.53	30.58	48.18	17.71	.52	5.73	81.99	2.34	9.42	.....	8,231	14,821	890
			2	.....	31.70	49.94	18.36	.41	.....	.....	.....	.....	.....	.....	8,400	11,928
Same (main entry 3 north, 1,400 feet west, 89-inch cut).	552b	A	1	.....	38.83	61.17	14.88	.41	.....	.....	.....	.....	2.3	6,697	12,055	888
			2	.....	32.21	49.53	15.40	.47	5.12	69.59	2.07	7.35	.....	.....	8,203	14,764
Same (cresscut 10 between chutes 56 and 57, level 2, Wingate bed, 49-inch cut).	9601	B	1	3.38	32.34	51.26	15.40	.47	5.12	69.59	2.07	7.35	.....	8,203	14,976	890
			2	.....	39.41	60.59	.....	.56	6.05	82.26	2.45	8.68	.....	.....	7,012	12,076
Same (main entry 3 north, 1,400 feet west, 89-inch cut).	552b	A	1	2.85	32.84	53.66	10.65	1.11	5.38	70.92	1.80	10.14	1.1	7,142	12,856	890
			2	.....	33.80	55.24	10.96	1.14	5.21	73.00	1.85	7.84	.....	.....	7,351	13,232
Same (main entry 3 north, 1,400 feet west, 89-inch cut).	552b	A	1	.....	37.96	62.04	16.04	1.28	5.85	81.99	2.08	8.80	.....	8,256	14,861	889
			2	.....	30.94	50.12	16.04	.46	.....	.....	.....	.....	.....	.....	6,907	12,433
Same (main entry 3 north, 1,400 feet west, 89-inch cut).	552b	A	1	2.90	30.94	50.12	16.04	.46	.....	.....	.....	.....	1.8	6,907	12,433	889
			2	.....	31.87	51.01	16.52	.47	.....	.....	.....	.....	.....	.....	7,117	12,810
Same (main entry 3 north, 1,400 feet west, 89-inch cut).	552b	A	1	.....	38.18	61.82	16.52	.47	.....	.....	.....	.....	.....	8,525	15,345	889
			2	.....	31.87	51.01	16.52	.47	.....	.....	.....	.....	.....	.....	7,117	12,810

WASHINGTON—Continued.

PIERCE COUNTY—continued.

Carbonado, Carbon Hill mines—Continued.
 Same (samples from north and south ends of level 3 gangway mixed, Wingate bed, 54-inch cut).
 Same (200 feet up chute 14, No. 4 bed, 82½ inches, 64½-inch cut).
 Same (over 3-inch bar screen, Wingate bed)...

Same (end of gangway on water level 3,200 feet south of portal, No. 5 bed, 48½-inch cut).
 Same (lump, from car, Wingate bed).....

Same (end of rock tunnel, No. 1 coking bed, 29 inches, 24-foot cut).
 Same (40 feet above gangway, 500 feet from entrance, No. 11 bed, 53 inches, 37½-inch cut).

Same (Douty lump from bins and cars, still moist).
 Same (level 1, 100 feet up chute 13, 600 feet north of bottom of electric slope, No. 1 bed, 88 inches, 77-inch cut).
 Same (crosscut 10 between chutes 56 and 57, level 2, Wingate bed, 49-inch cut).

Same (main entry 3 north, 1,400 feet west, 89-inch cut).

787D	C												474
			1	2	3	4	5	6	7	8	9	10	
Same (car sample).....			29.07	50.31	15.96	4.65	4.95	57.18	2.11	9.35	3.3	6,740	12,132
			30.40	52.77	16.74	4.7	4.65	70.47	2.21	6.46		7,070	12,726
Same (from cars, washed, still wet).....	C		36.62	63.38	12.45	5.6	5.59	84.64	2.65	6.56		8,491	15,285
			32.36	51.49	12.45	5.6	5.12	69.16	2.03	10.48	2.5	7,028	13,136
Same (south end of gangway, No. 3 coking bed, upper bench, 17-inch cut).....	B		33.0	53.47	12.93	7.0	4.89	71.82	2.11	7.46		7,298	13,136
			38.59	61.41		9.1	5.02	82.49	2.42	8.56		8,382	15,088
Same (from bunkers and cars, washed, Win- gate bed).....	C		31.30	52.39	13.44	3.0	5.10	70.13	1.88	9.15	3.5	7,034	12,661
			36.41	63.59	14.03	3.1	4.84	73.14	1.90	5.67		7,341	13,214
Same (from bunkers and cars, washed, Win- gate bed).....	C		30.52	51.09	12.06	3.2	5.03	85.12	2.03	6.01		8,538	15,368
			32.50	54.37	12.83	3.7	5.34	87.73	2.28	12.02	4.7	8,843	15,317
Same, Carbonado No. 4 N mine; rib in chute 16, two blocks below 14th counter, Wilkeson bed. Same.....	A		35.58	47.13	14.00	3.1	4.97	72.08	2.16	7.09		7,252	13,108
			36.59	48.89	14.52	3.2	5.70	82.69	2.48	8.13	2.2	8,354	15,037
			42.81	57.19		3.7							
			35.95	48.49	15.56	3.6							
			42.58	57.42		4.3							
Same (composite of Nos. 10573 and 10574).....	A		34.39	46.87	14.32	3.4	5.55	67.40	1.89	10.12	2.4	6,800	12,240
			35.84	48.84	15.70	3.5	5.31	70.24	1.97	6.81		7,086	12,755
			42.52	57.68		4.4	6.27	82.95	2.33	8.04		8,368	15,062
Same (south of; Fairfax mine (Blacksmith bed, from bunkers, washed).....	B		22.57	64.36	9.55	4.4	5.02	76.17	2.05	6.77	2.9	7,511	11,520
			23.39	66.71	9.90	4.6	4.50	78.95	2.12	3.77		7,785	14,013
Same (south end of water level gangway, 75 feet from tunnel, No. 7 bed, 8½ feet, 8-foot cut).....	B		25.96	74.04		5.1	5.33	83.81	2.35	4.18		8,040	15,552
			18.48	45.44	33.26	4.7	3.90	53.81	1.53	7.03	2.2	5,317	9,571
			19.02	46.76	34.22	4.8	3.69	55.37	1.57	4.67		5,471	9,849
Same (chute 8, 30 feet below water level north, No. 3 bed, 4½ inches, 44½-inch cut).....	B		28.91	71.09		7.3	5.61	84.17	2.39	7.10		8,317	14,972
			23.27	64.53	10.31	5.3	5.00	77.18	2.13	4.85	3	7,624	13,723
			23.72	65.77	10.51	5.4	4.88	78.67	2.17	3.23		7,771	13,958
			26.50	73.50		6.0	5.45	87.91	2.42	3.62		8,683	15,629
Same (south end of short gangway from rock tunnel, 500 feet in main gangway from No. 3 slope, 2½-inch cut).....	B		21.72	65.12	13.16	6.8	4.69	73.14	1.86	6.84	2.0	7,253	13,055
			25.01	74.99		8.1	5.39	87.12	2.20	4.42		8,640	15,582
			18.84	62.42	12.38	6.1	4.94	71.79	2.03	8.35	4.7	7,158	12,884
1 mile south of; Montezuma mine, from bunkers, washed, beds 3 and 4).....	B		20.96	65.96	13.08	6.4	4.69	75.85	2.14	3.80		7,503	13,613
			24.11	75.89		6.2	5.28	87.26	2.40	4.38		8,701	15,662
Same (counter 2 on chute 6, No. 4 bed, 3½-inch cut).....	B		21.60	65.62	10.70	5.6					2.0	7,455	13,419
			21.60	67.34	11.07	5.7						7,650	13,770
Same (chute 4, north water level, No. 1 bed, 5½ inches, 4-foot cut).....	B		24.38	75.72		9.7					5.0	8,602	15,484
			19.22	62.37	12.73	9.7						7,024	12,643
			20.36	66.12	13.50	1.03						7,447	13,405
Same (5 feet above counter 1, chute 36, water level, No. 2 bed, 35 inches, 3½-inch cut).....	B		23.56	70.44		1.19					2.3	8,609	15,496
			18.09	65.15	22.73	7.1						6,247	11,245
Same (from bunker, washed, No. 2 bed).....	B		24.26	75.64		9.5						8,415	15,147
			17.71	54.36	21.16	7.3	4.58	61.02	1.77	9.81	5.8	6,133	11,039
			18.09	58.32	22.69	7.8	4.11	66.40	1.90	4.12		6,576	11,837
Same (chute 11, 5 feet above water-level gangway, No. 3 bed, 33½-inch cut).....	B		19.13	55.44		1.0	5.32	55.89	2.40	3.32		6,507	15,313
			18.58	58.51	19.41	4.0					3.3	6,584	15,815
			18.38	60.91	20.21	6.4						6,834	12,305
			23.66	76.34								8,365	15,417

Fairfax, ½ miles south of; Fairfax mine (Blacksmith bed, from bunkers, washed).....

1 mile south of; Montezuma mine, from bunkers, washed, beds 3 and 4).....

Same (from bunkers, washed).	C	1	7.07	28.35	42.93	22.51	.43	5.13	57.93	1.45	12.55	5.0	5,769	10,384	474
Wilkeson, sec. 28, T. 19 N., R. 6 E., Brier Hill mine, (300 feet south of water-level portal, 54-inch cut).	9897	2	4.71	30.31	56.69	24.22	.16	4.97	52.34	2.56	6.75		6,208	11,174	474
Sec. 28, T. 19 N., R. 6 E., Gale Creek mine (10 feet south of auxiliary slope, level 1 air course, No. 1 bed, 39½-inch cut).	9897	3		30.78	57.01	28.5	1.15	4.30	52.49	1.74	11.89	2.3	5,208	9,536	474
Same (gangway, level 2, 100 feet south of rock tunnel, No. 2 bed, 3-foot cut).	9908	2		31.23	58.84	29.91	1.21	3.97	52.01	1.83	8.7		5,560	10,008	474
Sec. 28, T. 19 N., R. 6 E., Gale Creek mine (10 feet south of auxiliary slope, level 1 air course, No. 1 bed, 39½-inch cut).	9908	3		31.58	59.42		1.73	5.06	78.8	1.91	11.52	3.4	7,982	14,278	474
Same (gangway, level 2, 100 feet south of rock tunnel, No. 2 bed, 3-foot cut).	9909	2		36.40	59.05	8.06	.80	5.70	71.24	1.91	12.59		7,235	13,023	474
Same (gangway, level 2, 100 feet south of rock tunnel, No. 2 bed, 3-foot cut).	9909	3		38.51	57.96	8.53	.53	5.89	73.33	2.02	7.83		7,665	13,779	474
Same (pillar between chutes 3 and 4, level 2 gangway north, Queen bed, 3½-foot cut).	9910	1		36.45	57.33	5.98	.36	5.63	74.97	1.95	10.51	2.4	8,369	15,004	474
Same (pillar between chutes 3 and 4, level 2 gangway north, Queen bed, 3½-foot cut).	9910	2		38.57	51.13	6.22	1.00	5.41	78.01	2.73	7.53		7,946	14,303	474
Wilkeson mine, sec. 34, T. 19 N., R. 6 E. (screenings rowashed).	9898	3		38.87	57.33	9.56	1.07	5.77	83.18	2.16	7.82		8,473	15,251	474
Same (600 feet west by 600 feet south of north quarter corner of section 34, 100 feet south of rock tunnel, No. 7 bed, 3½-foot cut).	9899	2		34.75	53.42	9.83	1.01	5.24	73.88	2.00	8.11	1.4	7,473	13,451	474
Same (3,500 feet north by 1,600 feet west of southeast corner of section 34, south end of east gangway, No. 3 bed, 68½ inches, 57½-inch cut).	9900	3		38.54	61.46	13.57	.46	5.28	76.00	2.26	6.79		7,687	13,837	474
Same (1,500 feet north by 1,200 feet west of the southeast corner of section 34, east water level, No. 2 bed, lower part, 95½ inches, 35-inch cut).	9903	1		24.92	56.51	13.57	.57	5.04	69.29	1.98	9.06	5.5	6,838	12,326	474
Same (position and bed same as No. 9903, upper bench, 17-inch cut).	9904	2		23.21	70.79	13.57	.49	4.61	74.19	2.12	4.06		7,332	13,198	474
Same (50 feet up chute 19, southeast gangway, No. 3 bed, lower bench, 29-inch cut).	9901	3		23.17	61.13	9.76	.41	5.09	74.04	2.17	8.53	4.9	7,314	13,165	474
Same (position and bed same as No. 9901, upper bench, 78½ inches, 42½-inch cut).	9902	2		27.43	61.99	10.38	.44	4.71	78.72	2.31	3.44		7,776	13,977	474
Same (50 feet up chute 105 on southeast water level, No. 2 bed, 53½ inches, 40½-inch cut).	9905	1		20.44	59.27	14.95	.45	4.52	69.79	1.91	8.38	4.3	6,833	12,999	474
2 miles southeast of Snell mine (75 feet from entrance, Snell bed, 28 inches, 2-foot cut).	9896	3		21.59	62.62	15.79	.48	4.15	73.73	2.02	3.83		7,218	12,992	474
2 miles southeast of Snell mine (75 feet from entrance, Snell bed, 28 inches, 2-foot cut).	9896	2		25.64	74.36		.57	4.53	87.55	2.40	4.55		8,571	15,426	474
Centralia, 3 miles north of T. 15 N., R. 2 W., 64½ inches, Perth mine, 120 feet north of foot of slope, 53-inch cut.	*9178	1		19.13	61.26	16.05	.49	4.41	70.52	1.94	6.59	2.8	6,843	12,317	474
Hum (Toho); sec. 21, T. 15 N., R. 1 W., Hannaford No. 1 mine (entrance of room 12, level 1 north, lower bench, 71 inches, 69½-inch cut).	*9094	3		19.84	63.52	16.64	.61	4.16	73.12	2.01	3.56		7,006	12,773	474
		2		23.8	76.20			4.99	87.71	2.41	4.28		8,512	15,332	474
		1		18.48	54.95	23.51	.43					2.3	6,130	11,034	474
		2		19.06	56.69	24.25	.44						8,334	15,026	474
		3		25.16	74.84	17.81	.58					1.2	6,972	12,550	474
		2		24.53	55.29	18.27	.49						8,809	12,256	474
		3		35.12	56.61	18.27	.49						6,972	12,550	474
		2		30.73	69.27		.60						8,550	15,354	474
		1		25.27	67.68	61.27	8.53	5.23	76.94	2.05	6.83	1.6	7,917	13,890	474
		2		28.4	62.85	8.75	.43	5.07	78.93	2.10	4.72		7,917	14,251	474
		3		31.18	68.88		.47	5.56	86.50	2.30	5.17		8,676	15,617	474
		2		37.02	56.63	12.60	.45	5.08	72.54	2.19	7.14	2.8	7,210	12,978	474
		3		28.12	58.80	13.08	.47	4.85	75.32	2.27	4.01		7,486	13,475	474
		2		32.35	67.65		.54	5.58	86.66	2.61	4.61		8,613	15,503	474
		3		35.35	50.07	17.46	.78	4.58				5.4	6,424	11,563	474
		2		27.61	53.67	18.72	.84						6,886	12,395	474
		3		33.97	66.03		1.03						8,472	15,250	474
Centralia, 3 miles north of T. 15 N., R. 2 W., 64½ inches, Perth mine, 120 feet north of foot of slope, 53-inch cut.	*9178	1		32.05	34.02	8.65	.82	6.37	47.26	.91	35.99	12.4	4,539	8,170	474
Hum (Toho); sec. 21, T. 15 N., R. 1 W., Hannaford No. 1 mine (entrance of room 12, level 1 north, lower bench, 71 inches, 69½-inch cut).	*9094	2		43.25	45.40	11.55	1.09	4.77	63.08	1.21	18.30		6,059	10,906	474
		3		48.57	51.33		1.23	5.39	71.32	1.37	20.69		6,842	12,316	474
		1		31.5	37.2	9.1	.35					16.8	4,755	8,565	474
		2		41.0	47.3	11.7	.45						6,115	11,010	474
		3		46.0	54.0		.50						6,925	12,460	474

[illegible]

Same (face of the Harry Jones entry, 51½-inch cut).	8062	A	1	4.22	16.32	72.21	7.25	69	.....	3.4	.....	913
.....	2	.....	2	.....	17.04	75.39	7.57	72	.....	.....	.....	.....
.....	3	.....	3	.....	18.44	81.56	7.78	78	.....	.....	.....	.....
Same (composite of Nos. 8060, 8062, and 8063).	8115	.....	1	3.54	17.66	75.06	6.15	51	4.83	6.19	7,833	911
.....	2	.....	2	.....	17.66	75.06	6.15	53	4.40	3.15	8,120	.....
.....	3	.....	3	.....	18.86	81.14	6.38	57	4.91	3.37	8,673	.....
Beeshwood No. 2 mine, Fire Creek bed (John Porter entry, 4½-inch cut).	8059	A	1	2.87	17.02	75.03	4.18	52	.....	2.1	.....	911
.....	2	.....	2	.....	17.52	78.18	4.3	54	.....	.....	.....	.....
.....	3	.....	3	.....	18.31	81.69	4.6	56	.....	.....	.....	.....
Same (face of the Old Folks entry, 4½-inch cut).	8061	A	1	3.97	16.57	75.31	4.81	55	.....	3.2	.....	912
.....	2	.....	2	.....	16.57	78.42	5.01	57	.....	.....	.....	.....
.....	3	.....	3	.....	17.44	82.56	.....	60	.....	.....	.....	.....
Same (composite of Nos. 8059 and 8061).	8293	.....	1	3.46	16.37	75.59	4.58	54	4.06	5.77	8,063	912
.....	2	.....	2	.....	16.96	78.30	4.74	56	4.74	2.80	8,352	.....
.....	3	.....	3	.....	17.8	82.20	4.74	59	4.98	2.93	8,768	.....
Derryhale; Derryhale mine, Sewell bed (right entry 8 off new main, 3,100 feet south of drift mouth, 6½-inch cut).	8005	A	1	2.63	16.52	73.96	4.29	1.33	1.44	.....	.....	912
.....	2	.....	2	.....	20.05	73.54	4.41	1.39	1.96	.....	.....	.....
.....	3	.....	3	.....	20.97	79.03	4.41	1.43	.....	.....	.....	.....
Same (room 10, left entry 5 off main entry, 3,500 feet southeast of drift mouth, 6½-inch cut).	8006	A	1	3.14	18.02	74.98	3.86	73	.....	2.6	.....	912
.....	2	.....	2	.....	18.6	77.41	3.99	75	.....	.....	.....	.....
.....	3	.....	3	.....	19.37	80.63	2.57	78	.....	.....	.....	.....
Same (pillar, room 21, Price's air course, 3,800 feet northwest of drift mouth, 5½-inch cut).	8023	A	1	3.7	17.05	76.68	2.57	59	.....	3.0	.....	912
.....	2	.....	2	.....	17.7	79.63	2.67	61	.....	.....	.....	.....
.....	3	.....	3	.....	18.18	81.82	.....	63	.....	.....	.....	.....
.....	1	.....	1	3.33	17.34	75.68	3.65	83	4.92	5.93	8,107	912
.....	2	.....	2	.....	17.94	78.28	3.78	86	4.71	3.07	8,386	.....
.....	3	.....	3	.....	18.65	81.35	3.78	89	4.90	3.19	8,716	.....
.....	1	.....	1	3.71	18.47	75.05	2.77	47	.....	2.8	.....	912
.....	2	.....	2	.....	19.18	77.94	2.88	49	.....	.....	.....	.....
.....	3	.....	3	.....	19.75	80.25	.....	50	.....	.....	.....	.....
.....	1	.....	1	3.26	19.52	74.55	2.67	59	.....	2.5	.....	912
.....	2	.....	2	.....	20.18	77.06	2.76	61	.....	.....	.....	.....
.....	3	.....	3	.....	20.75	79.25	.....	63	.....	.....	.....	.....
.....	1	.....	1	2.0	17.57	74.10	6.33	91	4.75	5.36	8,036	.....
.....	2	.....	2	.....	17.93	75.61	6.46	93	4.59	3.08	8,200	.....
.....	3	.....	3	.....	19.17	80.83	.....	99	4.91	3.93	8,767	.....
.....	1	.....	1	2.61	16.41	75.26	5.72	90	4.63	5.36	8,072	.....
.....	2	.....	2	.....	16.85	77.28	5.87	92	4.46	3.13	8,288	.....
.....	3	.....	3	.....	17.9	82.10	.....	98	4.74	3.32	8,805	.....
.....	1	.....	1	3.05	16.74	74.57	2.64	79	.....	2.4	.....	914
.....	2	.....	2	.....	20.36	76.92	2.72	81	.....	.....	.....	.....
.....	3	.....	3	.....	20.93	79.07	.....	83	.....	.....	.....	.....
Dungen; Dungen mine, Sewell bed (room 1, right entry 2, 600 feet northwest of drift mouth, 6½-inch cut).	7994	A	1	3.01	20.07	74.31	2.61	96	.....	2.2	.....	914
.....	2	.....	2	.....	20.69	76.62	2.69	99	.....	.....	.....	.....
.....	3	.....	3	.....	21.26	78.74	.....	1.02	.....	.....	.....	.....
Same (room 3, left entry 5 off main entry 3, 1,400 feet N. 45° W. of drift mouth, 5½-inch cut).	8221	A	1	3.49	16.17	75.01	2.33	52	.....	2.7	.....	914
.....	2	.....	2	.....	16.86	77.73	2.41	54	.....	.....	.....	.....
.....	3	.....	3	.....	16.85	79.65	.....	55	.....	.....	.....	.....
Same (left 6 off main 4, 800 feet N. 45° W. of drift mouth, 4½-foot cut).	8220	A	1	3.23	16.92	74.83	2.62	75	5.22	6.05	8,214	914
.....	2	.....	2	.....	16.37	77.32	2.71	78	5.02	3.28	8,488	.....
.....	3	.....	3	.....	16.97	77.32	2.71	80	5.16	3.37	8,725	.....
.....	1	.....	1	.....	20.53	79.47	.....	.....	.....	.....	.....	.....
Same (composite of Nos. 7994, 8220, and 8221).	8295	.....	1	.....	20.53	79.47	.....	.....	.....	.....	.....	.....

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.						Ultimate.				Calorific value.		Reference.	
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.		British thermal units.
WEST VIRGINIA—Continued.																
FAYETTE COUNTY—continued.																
Dungen, Dungen mine—Continued.																
Same, Fire Creek bed (left entry 1, 600 feet east from drift mouth, 24½-inch cut).	7992	A	1	3.89	16.2	76.46	3.45	0.51					3.2	8,090	14,562	914
			2		16.86	70.55	3.59	.53						8,418	15,152	
			3		17.49	82.51	3.34	.55						8,731	15,716	
Dunloop, 1½ miles southeast of; Dunn Loup No. 2 mine, Sewell bed (right entry 1 off 4, 3,650 feet northeast of drift mouth, 69½-inch cut).	7984	A	1	2.68	16.81	77.17	3.43	.48					2.0	8,150	14,670	915
			2		17.27	79.3	3.43	.49						8,374	15,073	
			3		17.88	82.12		.51						8,672	15,610	
Same (right entry 10, 5,200 feet east of drift mouth, 63½-inch cut).	7985	A	1	3.69	17.24	76.13	2.94	.69	5.19	83.51	1.49	6.18	3.1	8,100	14,580	915
			2		17.9	79.05	3.05	.72	4.96	86.71	1.55	3.01		8,410	15,138	
			3		18.46	81.54		.74	5.12	89.44	1.60	3.10		8,675	15,615	
Same (main entry 4,000 feet from drift mouth, 68½-inch cut).	8603	A	1	3.6	16.0	78.0	2.4	.55					2.8			915
			2		17.0	80.5	2.5	.55								
			3		17.5	82.5		.60								
Same (right entry 2, 2,000 feet from drift mouth 2, 69½-inch cut).	8604	A	1	3.7	16.0	76.2	4.1	.55					2.8			915
			2		17.0	78.7	4.3	.60								
			3		17.5	82.5		.60								
Same (right entry 1 off entry 4, 3,600 feet north-east of drift mouth, 64½-inch cut).	8605	A	1	3.4	16.5	79.7	3.6	.85					2.6			915
			2		16.5	77.0	3.8	.90								
			3		17.0	83.0		.95								
Same (composite of Nos. 8603-8605).	8744	.....	1	3.4	15.5	77.6	3.48	.70	4.80	83.01	1.47	6.54	2.7	8,125	14,630	915
			2		16.0	80.4	3.0	.72	4.58	85.96	1.52	3.62		8,415	15,150	
			3		16.5	83.5		.75	4.75	89.17	1.58	3.75		8,730	15,710	
East Sewell, Brooklyn mine, Sewell bed (left heading 2, 50-inch cut).	8092	A	1	3.66	21.46	72.87	2.01	.77					2.7			916
			2		23.28	75.63	2.09	.80								
			3		23.75	77.25		.82								
Same (straight entry 7, 45-inch cut).	8093	A	1	3.26	20.22	73.64	2.88	.73					2.2			916
			2		20.9	76.12	2.98	.78								
			3		21.54	78.46		.80								
Same (right block entry 1, 44½-inch cut).	8094	A	1	3.55	21.45	73.12	1.88	.66					2.6			916
			2		22.24	75.81	1.95	.68								
			3		22.63	77.32		.69								
Same (composite of Nos. 8092-8094).	8159	.....	1	3.34	21.25	73.18	2.23	.56	5.13	84.19	1.55	6.34	2.5	8,234	14,821	916
			2		21.99	75.7	2.31	.58	4.92	87.10	1.60	3.49		8,519	15,334	
			3		22.51	77.49		.59	5.04	89.16	1.64	3.57		8,720	15,696	

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.		Reference.				
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.		Calo- ries.	British thermal units.		
WEST VIRGINIA—Continued.																		
FAYETTE COUNTY—continued.																		
Gentry, Layland No. 1 mine—Continued. Same (left entry 9, 3,500 feet east of drift mouth, 44½-inch cut).	8347	A	1	2.44	15.48	76.5	5.58	0.70						1.6		919		
			2		15.87	78.41	5.72											
			3		16.83	83.17												
Same (room 14, left entry 6, 2,400 feet east of drift mouth, 50½-inch cut).	8348	A	1	2.95	14.8	78.33	3.92	.66						2.0		919		
			2		15.25	80.71	4.04											
			3		15.89	84.11												
Same (pillar, room 4, left entry 4, 1,100 feet east of drift mouth, 46½-inch cut).	8349	A	1	3.24	15.53	76.31	4.92	.80						2.1		919		
			2		16.05	78.87	5.08											
			3		16.91	83.09												
Same (composite of Nos. 8346-8349).....	8425		1	2.87	15.41	76.91	4.81	.87	4.96	82.35	1.45	5.73	2.0	8.067	14,321	919		
			2		15.86	79.19	4.95											
			3		16.69	83.31												
Layland No. 2 mine (main heading, 5,300 feet north- east of drift mouth, 49½-inch cut), Tire creek bed.	8234	A	1	3.6	14.5	74.9	7.0	.76	4.78	81.78	1.49	3.28	2.7	8.305	14,949	919		
			2		15.0	77.7	7.3											
			3		16.0	84.0												
Same (pillar, left entry 5, 2,500 feet west of drift mouth, 46-inch cut).	8235	A	1	4.4	15.5	75.8	4.3	.85						3.5		919		
			2		16.5	79.0	4.5											
			3		17.0	83.0												
Same (left entry 10, 5,200 feet west of drift mouth, 45½-inch cut).	8236	A	1	3.8	16.0	75.2	5.0	.75						3.0		919		
			2		16.5	78.3	5.2											
			3		17.5	82.5												
Same (room 16, right entry 5, 46-inch cut)	8237	A	1	3.1	16.0	75.0	5.9	.75						2.3		919		
			2		16.5	77.4	6.1											
			3		17.5	82.5												
Same (composite of Nos. 8234-8237).....	8298		1	4.0	15.0	75.4	5.56	.80	5.04	81.47	1.40	5.83	2.9	7.935	14,280	919		
			2		15.5	78.7	5.79											
			3		16.5	83.5												
Layland No. 3 mine (main entry, 2,400 feet east of drift mouth, 38-inch cut), Tire creek bed.	8350	A	1	2.72	16.3	75.49	5.49	.66	5.07	90.11	1.46	2.35	1.8	8.265	14,890	919		
			2		16.76	77.6	5.64											
			3		17.76	82.24												
½ mile north of, Hemlock mine, Fire Creek bed (main heading, near left entry 11, 45½-inch cut).	8238	A	1	4.35	15.32	75.04	5.29	.64	5.13	89.02	1.48	3.05	3.5	8.740	15,732	920		
			2		16.02	78.45	5.53											
			3		16.96	83.04												

Same (composite of Nos. 7920, 7921, and 8085).....	8164	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Hawkes Nest, 1 mile east of Mill Creek mine, Sewell bed (room 6, near left entry 1, 1,000 feet from drift mouth, 23-foot cut).	8179	A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Same (main entry crosscut, 1,400 feet south-east of drift mouth, 30½-inch cut).	8178	A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Same (composite of Nos. 8178 and 8179).....	8288	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Herberton, Herberton mine, Eagle or No. 1 Gas bed (pillar right entry 1, 400 feet north of drift mouth, 47½-inch cut).	8903	A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Same (main entry, 1,500 feet northwest of drift mouth, 43½-inch cut).	8904	A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Same (room 21, left entry 1, 1,200 feet west of drift mouth, 49-inch cut).	8905	A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Same (composite of Nos. 8903-8905).....	8937	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Kilsyth, Kilsyth mine, Sewell bed (room 7, right entry 13, 3,000 feet southwest of drift mouth, 65½-inch cut).	8958	A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Same (main entry 2, 5,000 feet S. 11° W. of drift mouth, 70½-inch cut).....	8990	A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Same (left entry 14, 4,500 feet S. 13° E. of drift mouth, 52½-inch cut).	8995	A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Same (left entry 12, 5,500 feet S. 13° E. of drift mouth, 61½-inch cut).	8991	A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Same (room 11, dip entry 1, 4,500 feet S. 60° W. of drift mouth, 62½-inch cut).....	8989	A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Same (composite of Nos. 8958, 8989-8991, and 8995).	8163	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Laurel Creek, Laurel mine, Fire Creek bed (left straight heading 1, 3½-foot cut).	8073	A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Same (left heading 7, 45½-inch cut).....	8074	A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Same (right heading 12, 3½-foot cut).....	8075	A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63																																					

8299	.....	1	2	3	4.01	14.06	73.73	8.20	.78	4.83	79.05	1.40	5.74	3.3	7.692	13,846	928
Same (composite of Nos. 8197, 8214, and 8215)...		1	2	3	.....	14.06	76.81	8.54	.81	4.56	82.35	1.46	2.28	.....	8,014	14,425	.....
Lookout, 8 miles east of Nuttall; Blume mine, Sewell bed (right entry 10, 4,000 feet from drift mouth, 394-inch cut).	A	1	2	3	3.6	24.0	68.9	3.5	.55	.....	.....	.....	.....	2.6	8,763	15,773	920
Same (main straight entry, 4,500 feet from drift mouth, 344-inch cut).	A	1	2	3	2.8	22.5	69.9	4.8	.60	.....	.....	.....	.....	.....	.....	.....	.....
Same (right entry 1, off left entry 4, 1,500 feet from drift mouth, 37-inch cut).	A	1	2	3	3.4	23.0	71.4	4.9	.55	.....	.....	.....	.....	1.7	.....	.....	920
Same (right entry 1, off left entry 4, 1,500 feet from drift mouth, 374-inch cut).	A	1	2	3	3.52	22.6	71.89	1.93	.55	.....	.....	.....	.....	2.5	8,155	14,680	920
Same (composite of Nos. 8149 and 8150).....	.....	1	2	3	3.2	23.5	69.1	4.17	.58	.....	.....	.....	.....	.....	8,445	15,200	.....
Lookout mine, Sewell bed (left entry 1, 600 feet from drift mouth, 34-inch cut).	A	1	2	3	4.03	24.00	67.82	4.15	.77	5.05	81.34	1.47	7.43	2.2	8,654	15,266	920
Same (left entry 2, off straight entry, 1,300 feet from drift mouth, 324-inch cut).	A	1	2	3	3.22	24.36	69.75	2.67	.77	4.85	84.06	1.52	4.70	.....	8,255	14,800	920
Same (composite of Nos. 8133 and 8136).....	.....	1	2	3	3.71	23.53	69.37	3.39	.80	5.14	82.06	1.47	7.14	2.6	7,948	14,306	930
Macdonald, Macdonald mine, Sewell bed (7,720 feet from drift mouth, room 11, left entry 18, 604-inch cut).	A	1	2	3	3.26	22.30	75.16	2.54	.81	8.78	88.33	1.59	4.13	.....	8,555	15,399	930
Same (7,800 feet southwest of drift mouth, room 10, right entry 16, 564-inch cut).	A	1	2	3	3.51	21.11	72.83	2.55	.83	.....	.....	.....	.....	2.5	8,207	14,773	290
Same (run of mine).....	C	1	2	3	2.96	22.74	69.29	5.01	.89	4.81	81.64	1.57	6.08	2.3	8,014	14,425	336
Same (left entry 19, 7,000 feet west of drift mouth, 564-inch cut).	A	1	2	3	3.32	24.70	75.30	2.55	.92	4.62	84.13	1.62	3.55	.....	8,258	14,864	336
Same (cross entry 17 off left entry 18, 6,000 feet southeast of drift mouth, 564-inch cut).	A	1	2	3	2.98	18.78	78.52	2.70	.60	4.87	88.71	1.71	3.74	2.8	8,708	15,074	930
Same (pillar, right entry 11, 4,200 feet S. 10° W. of drift mouth, 684-inch cut).	A	1	2	3	3.02	17.52	76.31	3.15	.60	.....	.....	.....	.....	.....	.....	.....	930
Same (composite of Nos. 7987, 7993, and 7999).....	.....	1	2	3	3.22	17.53	76.46	2.79	.64	5.01	84.11	1.59	5.89	2.4	8,200	14,760	930
Sugar Creek mine, Sewell bed (room 4 on air course, 2,200 feet west of drift mouth, 564-inch cut).	A	1	2	3	2.45	19.12	75.14	3.29	.64	4.80	86.91	1.61	3.14	.....	8,473	15,251	930
		1	2	3	20.28	79.72		3.37	.68	4.94	89.49	1.66	3.23	1.9	8,725	15,705	932

	8023	A	1	2	3	21	15	51	13	70	2.5	933
Same (right air course 8, breakthrough 1, 50-inch cut).												
Same (crosscut, right entry 5, 2,400 feet west of drift mouth, 55-inch cut).	8381	A	1	2	3	25	12	48	3.23	79	2.0	933
Same (room, left entry 4, 1,300 feet southeast of drift mouth, 4½-foot cut).	8880	A	1	2	3	15	14	81	2.77	58	1.6	933
Same (composite of Nos. 8027 and 8028).	8249		1	2	3	22	0	72	3.4	1.10		933
Minden No. 4 mine, Sewell bed (left entry 4, 3,000 feet N. 82° W. of drift mouth, 50-inch cut).	8029	A	1	2	3	28	03	72	3.86	1.06	2.2	933
Same (room 5, right entry 9, S. 82° E. from drift mouth, 52½-inch cut).	8030	A	1	2	3	22	17	77	3.97	1.09	3.58	933
Same (main entry, 5,000 feet N. 82° E. from drift mouth, 47½-inch cut).	8031	A	1	2	3	26	08	74	1.54	1.14	3.73	933
Same (composite of Nos. 8029-8031).	8102		1	2	3	21	21	78	2.05	.56	2.6	933
Minden No. 5 mine, Sewell bed (left entry 6, 1,500 feet northwest from drift mouth, 53-inch cut).	8032	A	1	2	3	23	02	74	2.85	.67		934
Same (right heading 7, 850 feet northeast of drift mouth, 39½-inch cut).	8033	A	1	2	3	23	09	76	2.94	.64		934
Same (main heading, 4,000 feet north of drift mouth, 50½-inch cut).	8034	A	1	2	3	21	53	78	3.02	.66		934
Same (composite of Nos. 8032-8034).	8101		1	2	3	28	16	73	2.64	.73	2.3	934
Operator's shipment from mine working Fire Creek and Sewell beds, run of mine (sample 1).	5774	C	1	2	3	21	79	75	2.72	.77		362
Same (sample 2).	5775	C	1	2	3	22	40	77	2.69	.59	1.9	362
Same (sample 3).	5776	C	1	2	3	25	05	75	2.78	.65		362
Same (sample 4).	5777	C	1	2	3	24	05	72	5.89	.58		362
Gas bed, 800 feet north 68° E., 250 feet to dip of airway room 10 of airway 8, 569-inch cut.	6932	A	1	2	3	22	48	67	6.51	.64	4.9	935

Page, 1½ miles N. 65° E. of Eagle mine, Eagle or No. 1 Gas bed, 800 feet north 68° E., 250 feet to dip of airway room 10 of airway 8, 569-inch cut.

Table of chemical analyses—Continued.

Sample.		Proximate.					Ultimate.				Calorific value.		Reference.						
		Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile car- mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.		Oxy- gen.	Air- dry- ing loss.	Calo- ries.	British thermal units.	Bul- letin No.	Page of this bulle- tin.
Locality, bed, etc.																			
WEST VIRGINIA—Continued.																			
FAYETTE COUNTY—continued.																			
Page—Continued.																			
24 miles N. 65° E. of, Ansted mine, No. 2 Gas bed (1,100 feet northeast of opening, room 16 off entry 3, 8 feet 11½ inches; cut 8 feet 2 inches).	5439	A	1	2	2.65	29.69	63.50	4.16	1.29	.....	.....	.....	.....	1.9	8,104	14,537	.....	936	
			2	3	.....	30.50	65.23	4.27	1.33	.....	.....	.....	.....	.....	8,325	14,985	.....	.....
			3	31.86	68.14	1.39	8,696	15,653
Same (1,500 feet N. 63° east, room 22 off entry 6; thickness of bed, 9 feet 5½ inches; sample, 8 feet 5½ inches).	6933	A	1	1	3.32	28.88	62.72	5.08	.....	5.29	79.73	1.37	7.73	2.6	7,894	14,209	6	936	
			2	.....	.....	29.87	64.88	5.25	.....	5.09	82.46	1.42	4.95	.....	8,165	14,697	.....	.....
			3	.....	.....	31.32	68.48	.....	.....	5.37	87.03	1.50	5.22	2.3	8,617	15,510	.....	.....
Page No. 1 mine, Eagle bed (lower bench).	1869	A	1	1	3.53	29.36	64.77	2.34	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	937
			2	.....	.....	30.43	67.14	2.43	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
			3	.....	.....	31.19	68.81	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Same (middle bench).	1870	A	1	1	2.96	30.23	59.37	7.44	1.04	.....	.....	.....	.....	1.8	7,762	13,972	290	937	
			2	.....	.....	31.15	61.18	7.67	1.07	.....	.....	.....	.....	.....	7,999	14,398	23	.....
			3	.....	.....	33.74	66.26	.....	1.16	.....	.....	.....	.....	.....	8,663	15,593	.....	.....
Same (No. 8 airway, 1,100 feet from opening, 60-inch cut).	2178	A	1	1	4.11	29.08	59.36	7.45	.....	.....	.....	.....	.....	3.2	.....	.....	.....	.....	937
			2	.....	.....	30.33	61.90	7.77	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
			3	.....	.....	32.89	67.11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Same (run of mine).	2004	C	1	1	5.09	29.07	62.57	3.27	1.03	5.33	78.23	1.51	10.63	3.1	7,839	14,110	290	.....
			2	.....	.....	30.63	65.92	3.45	1.09	5.02	82.42	1.59	6.43	.....	8,259	14,866	.....	.....
			3	.....	.....	31.72	68.28	.....	1.13	5.19	85.36	1.65	6.67	.....	8,554	15,397	290	937	
Page No. 2 mine, Ansted or No. 2 Gas bed (lower bench).	1867	A	1	1	5.48	29.70	62.53	2.29	.....	.....	.....	.....	.....	4.5	8,030	14,454	33	.....
			2	.....	.....	31.42	66.16	2.42	.....	.....	.....	.....	.....	.....	8,465	15,291	13	.....
			3	.....	.....	32.20	67.80	.....	.....	.....	.....	.....	.....	.....	8,706	15,671	23	937	
Same (upper bench).	1868	A	1	1	2.93	31.95	60.17	4.95	1.22	.....	.....	.....	.....	1.9	.....	.....	.....	.....	937
			2	.....	.....	32.91	61.99	5.10	1.26	.....	.....	.....	.....	.....	.....	.....	.....	.....
			3	.....	.....	34.68	65.32	.....	1.33	.....	.....	.....	.....	.....	.....	.....	.....	.....
Same (No. 6 entry, 500 feet east, 100-inch cut).	2177	A	1	1	2.82	31.40	61.37	4.41	1.40	.....	.....	.....	.....	1.9	.....	.....	.....	.....	.....
			2	.....	.....	32.31	63.15	4.54	1.44	.....	.....	.....	.....	.....	.....	.....	.....	.....
			3	.....	.....	33.85	66.15	.....	1.51	.....	.....	.....	.....	.....	.....	.....	.....	.....
Same (run of mine)	2028	C	1	1	3.74	31.04	61.31	3.91	.....	5.31	80.50	1.32	8.07	2.6	8,020	14,436	290	.....
			2	.....	.....	32.25	63.69	4.06	.....	5.08	83.03	1.37	4.94	.....	8,332	14,998	.....	.....
			3	.....	.....	33.61	66.39	.....	.....	5.29	87.17	1.43	5.15	.....	8,684	15,631	.....	.....
Paral, ½ mile northwest of, Beech Creek mine, Eagle bed (right entry 2, 900 feet from drift mouth, 37½-inch cut).	8173	A	1	1	3.0	28.5	63.4	5.60	.....	5.34	79.73	1.51	6.85	2.1	7,890	14,210	.....	938	
			2	.....	.....	28.5	63.7	5.77	1.00	5.17	82.20	1.56	4.30	.....	8,135	14,650	.....	.....
			3	.....	.....	30.5	69.5	.....	1.06	5.49	87.23	1.66	4.56	.....	8,635	15,540	.....	.....

	1208	A	1	1.98	34.41	59.85	3.76	85	.....	.....	.....	1.0	8,188	14,738	13	938
Powellton, 3 miles south of; Vulcan mine, Powellton bed (extreme south side, 6½-foot bed, 5½-foot cut).	1	A	1	.....	35.11	61.05	3.84	87	.....	.....	.....	.....	8,383	15,035	92	.....
Same (extreme north side, 6½-foot bed, 53-inch cut).	1	A	1	1.77	32.63	62.76	2.94	74	.....	.....	.....	.....	8,087	15,637	46	939
Same (run of mine, 30 tons).....	3	C	3	.....	33.12	65.89	2.99	75	.....	.....	.....	.....	.....	.....	23	.....
.....	3	C	3	.....	34.14	65.86	.....	77	.....	.....	.....	.....	.....	.....	48	.....
.....	3	C	3	4.08	28.61	60.73	6.53	77	5.23	76.89	1.58	3.1	7,736	13,925	201	.....
.....	3	C	3	.....	29.83	63.31	6.86	80	4.98	80.16	1.65	.....	8,065	14,517	46	.....
.....	3	C	3	.....	32.03	67.97	.....	86	5.35	86.06	1.77	1.4	8,659	15,586	.....	939
Price Hill, Sherwood mine, Sewell bed (main west entry, 3.500 feet southwest of shaft, 41-inch cut).	1	A	1	2.15	18.43	75.88	3.54	1.01	.....	.....	.....	.....	.....	.....	.....	.....
.....	1	A	1	.....	18.84	77.54	3.62	1.07	.....	.....	.....	.....	.....	.....	.....	.....
.....	1	A	1	2.86	18.46	76.23	2.45	78	.....	.....	.....	2.2	.....	.....	.....	.....
.....	1	A	1	.....	19.00	78.48	2.52	80	.....	.....	.....	.....	.....	.....	.....	.....
.....	1	A	1	.....	19.49	80.51	.....	82	.....	.....	.....	.....	.....	.....	.....	.....
.....	1	A	1	2.58	19.01	75.53	2.88	90	5.10	81.45	1.45	1.8	8,265	14,877	.....	940
.....	1	A	1	.....	20.11	77.53	2.96	92	4.94	86.69	1.49	.....	8,484	15,271	.....	.....
.....	1	A	1	.....	20.51	79.89	.....	95	5.09	89.33	1.54	3.09	8,743	15,737	.....	940
.....	1	A	1	3.85	19.40	71.70	4.96	63	.....	.....	.....	2.6	7,911	14,240	.....	.....
.....	1	A	1	.....	21.28	78.72	.....	66	.....	.....	.....	.....	8,227	14,809	.....	.....
.....	1	A	1	.....	20.59	69.54	5.40	86	.....	.....	.....	3.3	8,775	15,615	.....	940
.....	1	A	1	4.47	20.59	69.54	5.40	86	.....	.....	.....	.....	8,795	14,631	.....	.....
.....	1	A	1	.....	22.84	77.16	5.65	90	.....	.....	.....	.....	8,159	14,686	.....	940
.....	1	A	1	.....	22.84	77.16	.....	95	.....	.....	.....	2.9	8,648	15,566	.....	.....
.....	1	A	1	4.08	19.01	72.61	4.30	53	.....	.....	.....	.....	.....	.....	.....	.....
.....	1	A	1	.....	19.82	75.70	4.48	55	.....	.....	.....	2.3	.....	.....	.....	940
.....	1	A	1	3.18	20.73	79.25	5.05	58	.....	.....	.....	.....	.....	.....	.....	.....
.....	1	A	1	.....	20.67	71.76	5.22	1.39	.....	.....	.....	.....	.....	.....	.....	.....
.....	1	A	1	.....	21.81	78.19	.....	1.47	.....	.....	.....	.....	.....	.....	.....	.....
.....	1	A	1	3.85	19.08	72.45	5.02	84	5.11	80.72	1.42	6.89	7,920	14,256	.....	941
.....	1	A	1	.....	19.84	74.94	5.22	87	8.87	83.95	1.48	3.61	8,237	14,827	.....	.....
.....	1	A	1	.....	23.93	79.07	.....	92	5.14	88.58	1.56	3.80	8,691	15,644	.....	941
.....	1	A	1	9.28	15.98	68.95	6.70	1.19	.....	.....	.....	.....	.....	.....	.....	.....
.....	1	A	1	.....	17.61	76.01	6.38	1.31	.....	.....	.....	.....	.....	.....	.....	.....
.....	1	A	1	.....	18.81	81.19	.....	1.40	.....	.....	.....	.....	.....	.....	.....	.....
.....	1	A	1	3.15	18.77	73.41	4.67	81	.....	.....	.....	2.7	.....	.....	.....	941
.....	1	A	1	.....	19.38	75.80	4.82	88	.....	.....	.....	.....	.....	.....	.....	.....
.....	1	A	1	2.59	20.36	79.64	3.86	67	.....	.....	.....	2.0	.....	.....	.....	941
.....	1	A	1	.....	18.62	74.93	3.96	69	.....	.....	.....	.....	.....	.....	.....	.....
.....	1	A	1	.....	19.12	76.92	.....	72	.....	.....	.....	.....	.....	.....	.....	.....
.....	1	A	1	.....	19.91	80.09	.....	72	.....	.....	.....	.....	.....	.....	.....	.....
.....	1	A	1	5.24	16.84	73.20	4.72	86	5.06	80.63	1.34	7.38	7,840	14,112	.....	941
.....	1	A	1	.....	17.77	77.25	4.98	91	4.73	85.10	1.41	2.87	8,274	14,893	.....	.....
.....	1	A	1	.....	18.70	81.30	.....	96	4.98	89.56	1.48	3.62	8,708	15,674	362	942
.....	1	A	1	2.79	18.82	75.46	2.93	70	.....	.....	.....	1.9	8,546	15,383	.....	.....
.....	1	A	1	.....	19.36	77.63	3.01	72	.....	.....	.....	.....	8,811	15,800	.....	.....
.....	1	A	1	.....	19.96	80.04	.....	74	.....	.....	.....	1.3	8,146	14,663	362	942
.....	1	A	1	2.27	20.52	71.75	5.46	60	.....	.....	.....	.....	8,535	15,003	.....	.....
.....	1	A	1	.....	21.00	73.41	5.59	61	.....	.....	.....	.....	8,828	15,890	.....	.....
.....	1	A	1	.....	22.24	77.76	.....	65	.....	.....	.....	.....	.....	.....	.....	.....

a Sample 8001 very wet on account of water where it was taken.

Table of chemical analyses—Continued.

Sample.		Proximate.				Ultimate.			Air-drying loss.	Calorific value.		Reference.
Lab- ora- tory No.	Kind	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Page of this bulle- tin.
WEST VIRGINIA—Continued.												
FAYETTE COUNTY—continued.												
Redstar.	C	1	2.09	19.39	74.63	3.89	0.89	4.88	79.61	1.33	9.40	362
			2	19.80	76.23	3.97	.91	4.74	81.31	1.36	7.71	.....
			3	20.62	79.38	.....	.95	4.94	84.67	1.42	8.02	.....
5574	C	1	2.36	18.76	73.74	5.14	.78	4.88	82.53	1.40	5.29	.....
			2	19.21	75.53	5.26	.82	4.73	84.52	1.43	3.28	.....
			3	20.28	79.72	.....	.82	4.99	89.21	1.51	3.47	.....
7988	A	1	2.71	17.87	76.22	3.20	.59	.....	.....	.....	.....	942
			2	18.37	78.34	3.29	.61	.....	.....	.....	.....	.....
			3	18.99	81.01	.....	.63	.....	.....	.....	.....	.....
7991	A	1	2.46	19.97	75.17	2.40	.63	.....	.....	.....	.....	942
			2	20.47	77.07	2.46	.65	.....	.....	.....	.....	.....
			3	20.99	79.01	.....	.67	.....	.....	.....	.....	.....
8656	A	1	2.8	17.5	77.1	2.6	.55	.....	.....	.....	.....	.....
			2	18.0	79.3	2.7	.60	.....	.....	.....	.....	.....
			3	18.5	81.5	.....	.60	.....	.....	.....	.....	.....
8657	A	1	2.4	19.0	74.2	4.4	1.15	.....	.....	.....	.....	.....
			2	19.5	76.0	4.5	1.15	.....	.....	.....	.....	.....
			3	20.5	79.5	.....	1.25	.....	.....	.....	.....	.....
8296	.....	1	2.81	18.96	75.49	2.74	.57	5.05	84.04	1.58	6.02	942
			2	19.51	77.67	2.82	.59	4.88	86.47	1.63	3.61	.....
			3	20.08	79.92	.....	.61	5.02	88.98	1.68	3.71	.....
8891	A	1	3.7	16.5	75.7	4.1	.55	.....	.....	.....	.....	943
			2	17.0	78.8	4.2	.55	.....	.....	.....	.....	.....
			3	18.0	82.0	.....	.60	.....	.....	.....	.....	.....
8285	A	1	3.0	15.5	78.7	2.8	.45	.....	.....	.....	.....	943
			2	16.0	81.1	2.9	.45	.....	.....	.....	.....	.....
			3	16.5	83.5	.....	.50	.....	.....	.....	.....	.....
8284	A	1	3.0	15.5	79.3	2.2	.65	.....	.....	.....	.....	.....
			2	16.0	81.8	2.2	.70	.....	.....	.....	.....	.....
			3	16.5	83.5	.....	.70	.....	.....	.....	.....	.....
8286	A	1	2.8	15.0	77.5	4.7	.65
			2	15.5	79.7	4.8	.65
			3	16.5	83.570

Same (composite of Nos. 8284 and 8285).....	8315</
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Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.						Ultimate.				Calorific value.		Reference.		
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.		British thermal units.	
WEST VIRGINIA—Continued.																	
FAYETTE COUNTY—continued.																	
South Nuttal, Brown mine, Sewell bed (Wheeler en- try, 3,500 feet from drift mouth, 38½-inch cut).	8142	A	1	3.2	21.5	73.4	1.9	0.50						2.2		946	
			2	.....	22.5	75.5	2.0	.50								
			3	.....	22.5	77.5										
Same (entry 18, 1,000 feet from drift mouth, 38- inch cut).	8143	A	1	3.3	23.0	71.8	1.9	.45						2.6	8,240	14,830	
			2	.....	24.0	74.1	1.9	.50							8,520	15,340
			3	.....	24.5	75.5									8,690	15,640
Same (Old Locketto entry, 4,000 feet from drift mouth, 42½-inch cut).	8144	A	1	3.6	21.5	73.0	1.9	.55						2.7		946	
			2	.....	22.5	75.5	2.0	.55								
			3	.....	22.5	77.5										
Same (left entry 1, 1,800 feet from drift mouth, 38½-inch cut).	8145	A	1	3.3	23.0	70.4	3.3	.65						2.3		946	
			2	.....	23.5	73.1	3.4	.70								
			3	.....	24.5	75.5										
Same (entry 18, 1,000 feet from secondary open- ing, 41½-inch cut).	8607	A	1	3.4	22.0	72.0	2.6	.50						2.5	8,180	14,730	
			2	.....	23.0	74.3	2.7	.50							8,465	15,240
			3	.....	23.5	76.5									8,700	15,660
Same (composite of Nos. 8142, 8144, and 8145)....	8196	.....	1	3.3	22.5	71.8	2.43	.58	5.22	84.36	1.54	5.87	2.4	8,215	14,780	946
			2	.....	23.0	74.5	2.51	.60	5.01	87.22	1.59	3.07		8,490	15,280	
			3	.....	23.5	76.5		.62	5.14	89.46	1.63	3.15	1.9	8,710	15,680	
Stone Cliff, Stone Cliff mine, Fire Creek bed (room 5, left entry 1 off main entry, 1,400 feet west of drift mouth, 46½-inch cut).	7995	A	1	2.80	17.69	74.02	5.49	.41								947	
			2	.....	18.20	76.15	5.65	.45						1.9		
			3	.....	19.29	80.71										
Same (room 1 right entry 1 off main, 1,500 feet north from drift mouth, 62½-inch cut).	7998	A	1	2.44	19.03	72.11	6.42	.50								947	
			2	.....	19.51	73.91	6.58	.51								
			3	.....	20.88	79.12										
Same (composite of Nos. 7995 and 7998).....	8250	.....	1	2.63	17.81	73.48	6.08	.46	4.84	82.08	1.32	5.22	1.9	7,934	14,281	947
			2	.....	18.29	75.47	6.24	.47	4.67	84.30	1.36	2.96		8,148	14,666	
			3	.....	19.51	80.49			4.98	89.91	1.45	3.16		8,689	15,640	
Stuart, Stuart mine, Sewell bed (left entry 4, 2,500 feet northeast of shaft, 45½-inch cut).	7872	A	1	2.84	22.79	71.72	2.65	.49						1.8	8,416	15,149	948
			2	23.46	73.81	2.73	.50							8,416	15,149	
			3	24.12	75.88									8,652	15,574	
Same (left entry 1, 1,500 feet northeast of shaft, 55-inch cut).	7873	A	1	3.78	21.20	72.71	2.31	.52						2.9	8,168	14,702	948
			2	22.03	75.57	2.40	.54							8,489	15,280	
			3	22.57	77.43		.55							8,698	15,656	

8213	A	1	2	3	3.57	17.96	72.34	6.13	75	.....	.....	.....	2.8	.....	.....	951
Same (north entry, 5,000 feet from drift mouth, 42½-inch cut).		1	2	3	.....	18.02	75.02	6.36	78	.....	.....	.....	.....	.....	.....	951
8290	.....	3	.....	.....	.....	19.88	80.12	.....	83	.....	.....	.....	.....	.....	.....	951
Same (composite of Nos. 8167, 8174, 8175, 8199, and 8214).	.....	1	2	3	3.6	16.83	73.42	6.15	67	4.02	81.03	1.55	5.68	7.898	14,216	951
8600	A	1	2	3	.....	17.46	76.16	6.38	60	4.09	84.05	1.61	2.58	8,193	14,747	951
Thurmond, 1 mile from; Newlyn mine, Firo Creek bed (room 5, on entry 2, 500 feet west of drift mouth, 32½-inch cut).	A	3	.....	.....	.....	18.65	81.35	.....	74	5.01	89.77	1.72	2.76	8,751	15,752	952
1½ miles northwest of; Minden No. 1 mine, Firo Creek bed (pillar, right entry 2, 1,000 feet from drift mouth, 71½-inch cut).	.....	1	2	3	3.3	18.5	76.0	2.2	60	.....	.....	.....	.....	8,310	14,940	952
Same (pillar, left entry 3, 1,200 feet southeast from drift mouth, 63½-inch cut).	.....	2	.....	.....	.....	19.0	78.7	2.3	60	.....	.....	.....	.....	8,595	15,470	952
8240	A	3	.....	.....	.....	19.5	80.5	.....	60	.....	.....	.....	.....	8,790	15,820	953
1½ miles northwest of; Minden No. 1 mine, Firo Creek bed (pillar, right entry 2, 1,000 feet from drift mouth, 71½-inch cut).	A	1	2	3	2.70	16.64	75.32	5.35	62	60	.....	.....	.....	.....	.....	953
8241	A	3	.....	.....	.....	17.12	77.38	5.60	62	.....	.....	.....	.....	.....	.....	953
Same (pillar, left entry 3, 1,200 feet southeast from drift mouth, 63½-inch cut).	.....	1	2	3	2.94	18.12	81.88	.....	64	.....	.....	.....	.....	.....	.....	953
8300	.....	3	.....	.....	.....	18.06	73.10	5.90	58	.....	.....	.....	.....	.....	.....	953
Same (composite of Nos. 8240 and 8241).	.....	2	.....	.....	.....	19.61	75.31	6.08	64	.....	.....	.....	.....	.....	.....	953
.....	.....	3	.....	.....	.....	18.81	78.19	.....	64	.....	.....	.....	.....	.....	.....	953
.....	.....	1	2	3	3.03	17.32	74.60	5.63	57	4.97	81.50	1.57	5.70	8,012	14,422	953
.....	.....	2	.....	.....	.....	17.57	76.32	5.81	59	4.78	84.13	1.62	3.07	8,284	14,875	953
.....	.....	3	.....	.....	.....	18.46	78.04	.....	63	5.07	86.32	1.72	3.26	8,774	15,703	953
2 miles west of; Echo (Henry) mine, Firo Creek bed (Baltimore heading, left entry 5, 1½ miles from drift mouth, 53½-inch cut).	A	1	2	3	3.20	16.07	75.14	5.20	51	4.03	81.83	1.46	3.01	7,982	14,368	953
Same (Echo 2, Klondike drift, left entry 1, 1,900 feet from drift mouth, 51½-inch cut).	A	2	.....	.....	.....	17.93	82.64	5.37	53	4.72	84.54	1.53	3.50	8,246	14,843	953
.....	.....	3	.....	.....	.....	16.87	75.89	4.48	56	4.09	89.32	1.62	3.42	7,714	15,688	953
.....	.....	1	2	3	3.43	16.87	75.89	4.48	50	5.14	91.69	1.60	3.49	7,983	14,369	953
.....	.....	2	.....	.....	.....	17.17	77.60	4.64	58	4.03	84.80	1.50	3.49	8,266	15,604	953
.....	.....	3	.....	.....	.....	18.32	81.98	.....	60	5.17	88.99	1.57	3.67	8,609	15,604	953
.....	.....	1	2	3	3.3	16.5	75.3	4.85	56	5.17	88.99	1.57	3.67	8,609	15,604	953
.....	.....	2	.....	.....	.....	17.5	77.5	5.01	58	4.07	84.97	1.62	3.15	8,305	14,950	953
.....	.....	3	.....	.....	.....	18.0	82.0	.....	61	4.07	84.97	1.62	3.15	8,305	14,950	953
.....	.....	1	2	3	3.35	18.63	75.69	4.31	51	4.02	89.45	1.71	3.31	8,749	15,740	954
.....	.....	2	.....	.....	.....	19.30	76.24	4.46	53	.....	.....	.....	.....	8,257	14,827	954
.....	.....	3	.....	.....	.....	20.20	73.80	.....	55	.....	.....	.....	.....	8,523	15,341	954
.....	.....	1	2	3	2.97	18.96	74.60	3.47	60	.....	.....	.....	.....	8,921	16,038	954
.....	A	2	.....	.....	.....	19.54	76.88	3.58	62	.....	.....	.....	.....	8,321	14,978	954
.....	.....	3	.....	.....	.....	20.27	73.73	.....	64	.....	.....	.....	.....	8,576	15,437	954
.....	C	1	2	3	2.04	18.96	71.75	7.25	64	4.80	80.83	1.49	4.88	8,894	16,009	.....
.....	.....	2	.....	.....	.....	19.35	73.25	7.40	75	4.07	82.51	1.52	3.13	7,919	14,254	.....
.....	.....	3	.....	.....	.....	20.90	73.10	.....	77	5.04	89.10	1.64	3.39	8,084	14,551	.....
.....	C	1	2	3	2.05	18.63	73.52	5.80	83	5.04	89.10	1.64	3.39	7,390	15,714	.....
.....	.....	2	.....	.....	.....	19.02	75.06	5.92	58	4.80	81.58	1.43	5.76	8,006	14,519	.....
.....	.....	3	.....	.....	.....	20.22	76.78	.....	62	4.73	83.29	1.46	4.02	8,255	14,823	.....
.....	A	1	2	3	2.8	17.94	74.33	4.93	75	6.03	88.53	1.55	4.27	8,753	15,755	.....
.....	.....	2	.....	.....	.....	18.46	76.47	5.07	77	.....	.....	.....	.....	.....	.....	954
.....	.....	3	.....	.....	.....	19.45	80.55	.....	81	.....	.....	.....	.....	.....	.....	954
.....	A	1	2	3	2.8	18.89	73.83	4.51	91	.....	.....	.....	.....	.....	.....	954
.....	.....	2	.....	.....	.....	19.40	75.96	4.64	94	.....	.....	.....	.....	.....	.....	954
.....	.....	3	.....	.....	.....	20.34	79.66	.....	99	.....	.....	.....	.....	.....	.....	954
.....	A	1	2	3	2.64	18.80	74.31	4.25	72	72	.....	.....	.....	.....	.....	954
.....	.....	2	.....	.....	.....	19.31	76.32	4.37	74	.....	.....	.....	.....	.....	.....	954
.....	.....	3	.....	.....	.....	20.19	79.81	.....	77	.....	.....	.....	.....	.....	.....	954
.....	.....	1	2	3	2.68	19.05	73.79	4.48	68	5.04	82.78	1.60	5.42	8,039	14,470	.....
.....	.....	2	.....	.....	.....	19.57	75.83	4.60	70	4.87	85.06	1.64	3.13	8,290	14,868	.....
.....	.....	3	.....	.....	.....	20.51	70.49	.....	73	5.10	89.16	1.72	3.29	8,458	15,584	.....

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.		Reference.			
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile car- mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.		Calo- ries.	British thermal units.	Page of this bulle- tin.
WEST VIRGINIA—Continued.																	
FAYETTE COUNTY—continued.																	
Thurmond—Continued. 3½ miles west of; Red Ash mine, Fire Creek bed (cross entry 1 off left entry 10, 1½ miles from drift mouth, 4½-foot cut).	8070	A	1	2.45	18.68	75.28	3.59	0.58					1.8				955
			2		19.15	77.17	3.68	.59									
			3		19.88	80.12		.61									955
Same (pillar, room 1, left entry 7, 1¼ miles south from drift mouth, 64½-inch cut).	8071	A	1	4.36	16.42	74.94	4.28	.52					3.6				955
			2		17.17	78.35	4.48	.54									
			3		17.98	82.02		.57									955
Same (1¼ miles southwest of drift mouth, 79- inch cut).	8072	A	1	3.19	17.45	70.84	8.52	.72					2.1				955
			2		18.02	73.18	8.80	.74									
			3		19.76	80.24		.81									955
Same (composite of Nos. 8070-8072).....	8108		1	3.29	17.85	73.39	5.47	.59	4.87	81.36	1.46	6.25	2.5	7,931	14,276		955
			2		18.46	73.88	5.66	.61	4.65	84.13	1.51	3.44		8,201	14,762		955
			3		19.57	80.43		.65	4.93	89.18	1.60	3.64	2.6		8,693	15,647		956
Turkey Knob, Turkey Knob mine, Sewell bed (left entry 15, 6,000 feet S. 80° E. from drift mouth, 77½-inch cut).	8035	A	1	3.34	18.07	75.82	2.77	.51									956
			2		18.70	78.43	2.87	.53									956
			3		19.25	80.75		.55					2.6				956
Same (room 10, off right entry 14, 6,000 feet S. 30° E. from drift mouth, 53½-inch cut).	8036	A	1	3.31	18.43	76.10	2.16	.56									956
			2		19.06	78.71	2.23	.58									956
			3		19.49	80.51		.59									956
Same (haul-way off right entry 7, 4,000 feet S. 30° E. from drift mouth, 52½-inch cut).	8048	A	1	2.79	18.93	74.59	3.69	1.01					2.3				956
			2		19.47	76.73	3.80	1.06									956
			3		20.24	79.76		1.73					2.30				956
Same (pillar, room 19, left entry 12, 5,400 feet east of drift mouth, 60½-inch cut).	8047	A	1	3.01	16.95	77.40	2.64	.51									956
			2		17.48	79.80	2.72	.53									956
			3		17.97	82.03		.54									956
Same (composite of Nos. 8035, 8036, 8047, and 8048).	8103		1	3.22	19.22	74.82	2.74	.77	4.93	84.42	1.41	5.73	2.5	8,231	14,816		956
			2		19.86	77.31	2.83	.80	4.72	87.23	1.46	2.96		8,505	15,309		956
			3		20.44	79.56		.82	4.86	89.77	1.50	3.05		8,752	15,754		957
Whipple, Whipple mine, Sewell bed: (entry 1, rock heading district, 4,000 feet north of shaft, 52½-inch cut).	7889	A	1	2.41	20.58	71.64	5.37	1.06					1.2	7,962	14,332		957
			2		21.09	73.41	5.50	1.09						8,159	14,686		957
			3		22.31	77.69		1.15						8,634	15,541		957
Same (room 14, entry 16, 3,000 feet west of shaft, 5-foot cut).	7890	A	1	2.51	19.67	71.32	6.50	.92					1.5	7,864	14,191		957
			2		20.18	73.15	6.67	.94						8,087	14,557		957
			3		21.62	78.38		1.01						8,665	15,597		957

8098	A	1	2.98	19.19	74.64	2.99	1.05				2.1		957
Same (right entry 3 off main dip entry, 50-inch cut).		2		19.78	77.14	3.08	1.08						
8599	A	2	2.7	20.41	79.59	4.0	1.11				2.0		957
Same (left entry 1 off Harvey's entry, 58½-inch cut).		3		20.5	72.8	4.0	.65						
8157	.....	3		21.0	74.9	4.1	.65						957
Same (composite of Nos. 7889, 7890, and 8098).....		3		21.5	78.5		.65						
5467	A	1	2.67	20.06	72.00	5.18	1.02	4.78	82.32	1.47	5.23		958
Winona, Snokless mine, Sewell bed (1,800 feet south-east of drift mouth), left entry 1 for motor hauls, 40½-inch cut.		2		21.77	74.07	5.32	1.05	4.00	84.58	1.51	2.94		
5468	A	1	3.22	23.53	71.16	2.09	.57	4.86	89.33	1.59	3.11		958
Same (2,500 feet south of drift mouth, first right, off main, 44½-inch cut).		2		21.31	73.53	2.16	.59				2.4		
5709	C	1	3.34	24.85	75.15	1.84	.56						958
Same (run of mine, first ear).....		2		23.67	71.15	1.84	.56				2.4		
5711	C	1	3.98	24.96	75.04	1.90	.59						958
Same (run of mine, second ear).....		2		23.21	70.41	5.40	.66	5.31	79.56	1.34	7.73		
8132	A	1	3.19	23.04	73.54	2.23	.68				3.0		958
Same (Adams entry, 2,200 feet from drift mouth, 44-inch cut).		2		23.80	73.90	2.30	.70						
8133	A	1	3.71	21.77	72.05	2.17	.68				2.3		958
Same (left entry 3, 2,000 feet from drift mouth, 52½-inch cut).		2		22.61	74.82	2.57	.71						
8134	A	1	3.13	23.21	76.79	1.92	.57				1.8		958
Same (pillar, left cross entry 15 off old hill main entry, 1,500 feet from drift mouth, 45-inch cut).		2		23.22	71.73	1.98	.59						
8186	.....	2		23.97	74.05	1.98	.60						958
Same (composite of Nos. 8132, 8133, and 8134) ..		3		21.45	73.55		.61	5.10	84.02	1.60	6.37		
1 mile from; Dubree mine, Sewell bed (room 7, right entry 7, 38½-inch cut).		1	3.41	22.54	71.81	2.24	.63	4.89	86.99	1.72	3.45		959
8147	A	1	2.8	23.9	76.1	3.0	.64	5.01	89.06	1.70	3.53		959
Same (left entry 7, 40½-inch cut).....		2		24.5	69.7		.60				2.0		
8148	A	1	3.2	25.0	71.9	3.1	.55						959
Same (left entry 7, 40½-inch cut).....		2		26.0	74.0		.55				2.3		
8191	.....	1	3.0	24.5	68.7	3.78	.59	5.02	81.61	1.55	7.45		959
Same (composite of Nos. 8147 and 8148).....		2		25.5	74.5		.61	4.83	84.13	1.60	4.93		
1594	A	1	4.15	36.76	49.91	9.18	.510	5.03	87.55	1.66	5.13		960
Zalia, country bank, Mahoning bed, entire seam, 40-inch cut.		2		38.35	52.07	9.58	5.32				2.9		48
Country bank, Rogers or Lower Freeport bed, entire seam, 3-foot cut.		3	6.46	33.88	49.74	9.92	5.88				4.0		48
1572	A	1	4.02	40.52	59.48	10.61	6.03						

Table of chemical analyses—Continued.

Locality, bed, etc.		Sample.		Proximate.					Ultimate.					Calorific value.		Reference.			
				Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile car- mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.	British thermal units.	Bul- letin No.	Page of this bulle- tin.
WEST VIRGINIA—Continued.																			
HARRISON COUNTY.																			
Clarksburg, Piteclair mine, Pittsburgh bed (fourth left entry, 103½-inch cut).		1103	A	1	1.98	40.54	48.40	9.08	4.20			1.28		0.9	7,481	13,465	261	960	
				2	1.95	41.36	49.38	9.26	4.28			1.31			7,632	13,738	261		
Same (third right entry, 85-inch cut)		1104	A	1	1.87	40.30	49.73	8.10	3.75			1.44			8,411	15,140	261	960	
				2	1.87	41.07	50.68	8.25	3.82					.8					
Same (run of mine, 11 tons)		1308	C	3	1.95	44.76	55.24	7.86	4.16								48		
				1	1.95	39.94	50.25	7.86	3.48	5.13	74.07	1.36	8.10	.5	7,661	13,790	261		
				2	1.95	40.73	51.25	8.02	3.55	5.01	75.54	1.39	6.49		7,813	14,063	48		
3 miles east of; Ocean mine, Pittsburgh bed (2750 feet northwest of drift mouth, but entry 2 off face entry 3, 74½-inch cut).		2039	A	1	2.8	44.28	55.72	5.55	2.40			1.51	7.06		8,495	15,291	290	961	
Same (2,025 feet northeast of drift mouth, room 7 off but entry 3, 77½-inch cut).		2040	A	1	3.27	38.51	53.14	5.71	2.47					1.5	8,836	14,105	290		
				2	3.27	39.62	54.67	5.55	2.62						8,902	14,512	23		
Same (run of mine)		2195	C	3	2.01	37.31	52.13	8.55	2.40					1.9	8,550	15,390	290	961	
				1	2.01	37.31	52.13	8.55	2.54	5.08	75.83	1.43	6.57	.9	7,673	13,811	290		
				2	2.01	38.08	53.19	8.73	2.59	4.96	77.39	1.46	4.87		7,830	14,094			
				3	41.72	58.28		8.73	2.84	5.43	84.79	1.60	5.34		8,579	15,442			
KANAWHA COUNTY.																			
Acme, Keystone mine, No. 2 Gas bed (4,600 feet east of drift mouth, left entry 8, 56½-inch cut).		2375	A	1	2.66	33.30	59.60	4.44	1.14					1.4	7,982	14,368	290	961	
				2	2.66	34.21	61.23	4.50	1.17						8,200	14,740	336		
				3	2.84	35.84	64.16	5.23	1.23						8,592	15,466	13		
Same (3,500 feet east of drift mouth, room 16 off fifth right entry, 67½-inch cut).		2376	A	1	2.84	33.18	58.75	5.23	1.35					1.6			290	961	
				2	2.84	34.15	60.47	5.38	1.39								23		
Same (run of mine, sample 1)		2556	C	3	2.82	36.09	63.91		1.47										
				1	2.82	32.20	56.95	8.03	1.38	5.16	76.74	1.34	7.35	2.1	7,648	13,766	290		
				2	2.82	33.13	58.61	8.26	1.42	4.99	78.97	1.38	4.98		7,870	14,166			
Same (run of mine, sample 2)		2626	C	3	2.89	33.13	58.61	8.26	1.55	5.44	86.08	1.50	5.43		8,579	15,442			
				4	2.89	36.12	63.88			5.53	87.43	1.53	5.51	1.9	8,678	15,620	290		
Same (run of mine, sample 2)		2626	C	1	2.89	32.53	56.95	7.63	1.50										
				2	2.89	33.50	58.04	7.86	1.54										
				3	36.36	63.64		7.86	1.67										
Charleston, 8 miles southeast of Black Band No. 2		4290	A	1	3.40	34.55	53.79	8.20	.58					1.8			332	962	

mine; Black Band or Winifrede bed (1,300 feet south of opening, 23½-inch cut). Same (800 feet west of opening, 34½-inch cut).....	4291	A	2	35.70	55.72	8.49	60	13	962
Same (lump, over 1½-inch screen).....	4360	C	1	39.11	60.89	6.66	66	7.484	13.471
			2	3.91	54.48	6.78	64	8.379	14.020
			3	36.25	56.69	7.06	67	8.379	15.082
			4	39.01	60.99	7.22	72	7.483	13.379
Hernshaw, Butler mine, No. 2 Gas bed, car sample, through 1½-inch screen.	3711	C	1	4.21	53.41	7.54	67	7.760	13.968
			2	36.97	55.49	7.54	67	8.391	15.107
			3	39.98	60.02		72	8.437	15.187
			4	4.59	52.23			7.713	12.836
Marmet mine (400 feet east of opening, 62-inch cut).	3456	A	1	33.98	54.74	10.27	1.01	7.474	13.836
			2	38.99	61.01		63	8.330	14.983
			3	2.75	56.27	5.49	69	7.674	13.813
			4	36.49	57.86	5.65	65	7.891	14.204
ame (1,200 feet east of opening, 43-inch cut).....	3457	A	1	3.49	58.44	6.67	63	8.363	15.053
			2	34.89	58.44	6.67	63		
			3	37.38	62.62		70		
			4	3.42	55.37	7.82	83	7.492	13.486
Same (slack through 1½-inch screen).....	3905	C	1	3.42	55.37	7.82	83	7.757	13.963
			2	34.68	57.22	8.10	86	8.440	15.192
			3	37.73	62.27		94	8.499	15.298
			4	3.13	57.82	3.54	59	7.757	13.963
Monarch; Monarch mine, Cedar Grove bed (1,500 feet north of opening, 37½-inch cut).	3458	A	1	3.13	57.82	3.54	59	8.008	14.414
			2	36.05	61.95	6.30	1.24	8.311	14.900
			3	4.17	54.17	6.30	1.24		
			4	36.90	56.53	6.57	1.20		
Same (1,500 feet northwest of opening, 38-inch cut).	3459	A	1	3.25	54.56	7.58	1.22		
			2	35.77	56.40	7.83	1.26		
			3	39.49	60.51		1.38		
			4	38.82	61.18		1.37		
Same (slack through 1½-inch screen).....	3925	C	1	34.71	55.14	8.10	1.33		
			2	33.44	56.29	8.27	1.30		
			3	38.63	61.37	3.62	1.14		
			4	2.03	55.14		1.33		
Same (run of mine).....	3965	C	1	3.57	56.93	3.75	1.18		
			2	38.12	58.13		1.23		
			3	39.01	60.39	4.12	1.16		
			4	3.72	55.95	38.38	1.20		
Winifrede, Gas mine, Peerless bed (1,400 feet southeast of drift mouth, room 12 off left entry 3, 33½-inch cut).	2377	A	1	37.34	58.38	4.28	1.25		
			2	36.38	55.20	4.85	1.32		
			3	37.73	57.24	5.03	1.37		
			4	39.72	60.28		1.44		
Same (800 feet southeast of drift mouth, room 10 off left entry 1, 26½-inch cut).	2378	A	1	3.57	56.93		1.25		
			2	36.38	55.20	4.85	1.32		
			3	37.73	57.24	5.03	1.37		
			4	39.72	60.28		1.44		
Same (run of mine).....	2572	C	1	3.57	56.93		1.25		
			2	36.38	55.20	4.85	1.32		
			3	37.73	57.24	5.03	1.37		
			4	39.72	60.28		1.44		
Holden, 1 mile east of; No. 3 mine, Island Creek (No. 2 Gas) bed (right entry 1, off main, 74½-inch bed, 67½-inch cut).	7658	B	1	1.60	57.86	6.84	1.27		
			2	34.25	58.80	6.95	1.29		
			3	36.81	63.19		1.39		
			4	32.89	59.91	5.51	.95		
Same (1,600 feet northeast of opening, left entry 3, off main, 77-inch bed, 58½-inch cut).	7659	B	1	1.60	57.86	6.84	1.27		
			2	34.25	58.80	6.95	1.29		
			3	36.81	63.19		1.39		
			4	32.89	59.91	5.51	.95		

LOGAN COUNTY.

	8364	A	2	4.2	14.0	77.2	4.6	50	3.3	96
Same (cross entry 8, off diagonal 1, 04-inch cut).			2	3	14.5	80.7	4.8	50	2.7	
Same (cross entry 12, off Burkes garden entry, 58½-inch cut).	8365	A	1	3.6	15.5	84.5	4.5	55		
Same (composite of Nos. 8363-8365).....	8419		3	3.6	14.0	78.5	3.9	45		
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	14.5	81.5	4.0	45		
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	13.5	78.2	4.70	45	2.8	967
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	14.0	81.5	4.88	46	5.54	
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	14.5	85.5	4.56	48	1.12	
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	13.5	79.3	4.36	48	2.53	
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	13.0	78.0	4.51	50	2.6	967
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	14.5	85.5	4.56	52	2.73	
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	14.0	76.1	5.7	45	2.86	
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	14.5	79.5	6.0	50	3.1	968
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	15.5	84.5	5.5	55	2.4	
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	14.0	79.0	4.0	55	2.5	968
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	15.0	85.0	3.5	55	2.7	
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	14.5	81.9	3.6	55	2.5	
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	15.0	85.0	4.4	65	2.3	
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	14.5	80.9	4.6	70	2.3	
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	15.0	85.0	5.0	80	2.3	
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	15.5	79.3	5.2	85	2.3	
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	16.5	83.5	5.33	64	2.3	
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	14.5	77.4	5.48	66	2.3	968
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	14.5	80.0	5.48	70	2.78	
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	15.5	84.5	3.6	50	3.5	969
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	13.0	79.3	3.7	55	2.0	
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	13.5	82.8	3.9	50	1.9	
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	14.0	86.0	4.0	55	2.0	
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	13.5	82.5	4.0	55	1.9	
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	14.0	86.0	4.0	55	2.0	
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	14.0	79.7	3.8	50	2.3	969
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	14.5	81.6	3.9	50	2.3	
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	15.0	85.0	4.6	50	2.5	
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	14.0	78.9	4.7	50	2.5	969
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	14.5	83.6	3.67	51	1.9	
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	13.0	83.2	3.79	53	1.9	
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	13.5	86.5	7.0	53	2.20	
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	14.0	76.5	7.1	60	1.9	969
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	14.5	78.4	7.1	60	1.9	
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	13.5	84.5	5.2	65	1.9	969
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	14.5	77.9	5.3	65	1.9	
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	15.0	79.7	5.3	70	1.9	
Same (composite of Nos. 8325 and 8326).....	8418		3	3.6	16.0	84.0	5.3	70	1.9	

Same (cross entry 8, off diagonal 1, 04-inch cut).

Same (cross entry 12, off Burkes garden entry, 58½-inch cut).

Same (composite of Nos. 8363-8365).....

Same (composite of Nos. 8325 and 8326).....

Same (composite of Nos. 8325 and 8326).....

Same (composite of Nos. 8325 and 8326).....

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Same (composite of Nos. 8325 and 8326).....

Same (composite of Nos. 8325 and 8326).....

Same (composite of Nos. 8325 and 8326).....

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.						Ultimate.				Calorific value.		Reference.	
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.		British thermal units.
WEST VIRGINIA—Continued.																
M'DOWELL COUNTY—continued.																
Eckman, Pulaski No. 2 mine—Continued. Same (room 10, cross entry 3, off entry 35, 6,000 feet in, 80½-inch bed).	9305	A	1	2.73	15.68	76.38	5.21	0.62						2.2		983
			2		16.12	78.52	5.36									
			3		17.03	82.97										
	9306	A	1	3.14	15.94	76.95	3.97	.64						2.6		983
			2		16.46	79.44	4.10									
			3		17.16	82.84										
	9307	A	1	2.68	15.02	77.09	5.21	.62						2.0		983
			2		15.44	79.21	5.35									
			3		16.31	83.69										
	9469		1	3.06	14.91	76.60	5.43	.57	4.76	82.61	1.07	5.56	2.6	8,011	14,420	983
2				15.38	79.02	5.60			4.53	85.22	1.10	2.93		8,264	14,875	983
3				16.29	83.71				4.83	90.27	1.17	3.11	3.1	8,754	15,757	983
10093	A	1	3.64	16.06	76.28	4.02	.57						2.5		983	
		2		16.67	79.16	4.17										
		3		17.40	82.60											
10094	A	1	3.09	15.37	77.53	4.01	.57						2.5		983	
		2		15.86	80.00	4.14										
		3		16.55	83.45											
10095	A	1	3.37	16.33	76.21	4.09	.56						2.8		983	
		2		16.90	78.87	4.23										
		3		17.65	82.35											
10103		1	3.32	16.22	76.35	4.11	.55	4.67	83.05	1.16	6.46	2.8	8,101	14,587	983	
		2		16.78	78.97	4.25			4.45	85.90	1.20	3.63		8,382	15,088	983
		3		17.53	82.47				4.65	89.71	1.25	3.79	2.3	8,754	15,757	983
10096	A	1	2.81	14.73	77.31	5.12	.62						2.3		983	
		2		15.16	79.57	5.27										
		3		16.00	81.00											
10097	A	1	3.44	16.94	74.62	5.00	.63						2.8		983	
		2		17.54	77.28	5.18										
		3		18.50	81.50											
10098	A	1	3.09	16.41	75.85	4.65	.57						2.5		983	
		2		16.93	78.27	4.80										
		3		17.78	82.22											

8344	1	2.7	13.5	79.1	4.09	54	4.49	84.19	1.17	4.92	2.0	8.100	14.690	991
8739	A	1	2	13.5	81.5	4.82	56	4.31	86.56	1.20	2.55		8.390	15.100	992
		2	2.9	14.3	80.7	4.4	55	4.53	90.94	1.26	2.68		8.815	15.860	
		3	12.3	82.0	4.5	55									
8729	A	1	2	13.0	87.0	4.5	60								992
		2	2.5	13.0	76.9	4.0	60								
		3	13.0	82.3	4.7	65									
8728	A	1	3	13.0	86.0	4.6	70								992
		2	3.4	12.0	80.9	3.7	70								
		3	12.5	83.7	3.8	75									
8846	1	3	13.0	87.0	4.22	58	4.55	84.34	1.14	5.17	2.3	8.105	14.700	992
		2	2.8	13.5	82.2	4.34	60	4.36	86.79	1.17	2.74		8.400	15.120	
		3	13.5	85.5	5.0	63	4.56	90.73	1.22	2.86		8.780	15.810		
8444	A	1	1	11.5	80.8	5.0	90								993
		2	2.1	12.5	87.5	6.1	95								
		3	12.0	79.4	6.2	75									
8445	A	1	2	12.0	81.8	6.2	75								993
		2	3.1	12.0	78.8	6.1	80								
		3	12.0	81.8	6.2	85									
8447	A	1	3	13.0	87.0	5.8	90								993
		2	3.4	11.5	79.3	5.8	75								
		3	12.0	81.9	6.1	80									
8469	1	2	13.0	87.0	5.9	85	4.40	85.44	1.06	4.38	2.3	8.010	14.410	993
		2	2.8	11.5	79.8	6.07	84	4.21	85.87	1.09	1.92		8.240	14.830	
		3	12.0	81.9	6.07	89	4.48	91.42	1.16	2.05		8.775	15.790		
10034	A	1	3	13.0	87.0	6.82	71								994
		2	1.01	14.52	77.65	6.89	72								
		3	14.67	78.44	6.89	77									
8709	A	1	2	13.0	81.4	5.5	65								994
		2	2.5	13.0	79.0	5.5	65								
		3	14.0	86.0	5.0	70									
8710	A	1	3	12.0	79.7	5.0	60								994
		2	3.3	12.5	82.3	5.2	60								
		3	13.5	80.5	5.8	65									
8711	A	1	3	13.0	77.9	5.8	50								994
		2	3.3	13.5	80.5	6.0	50								
		3	14.5	85.5	5.18	55									
8795	1	3	14.5	78.5	5.18	62	4.42	83.52	1.03	5.23	2.1	8.000	14.510	994
		2	2.8	13.5	80.7	5.33	64	4.28	85.92	1.06	2.81		8.290	14.920	
		3	14.0	80.7	5.33	68	4.41	90.76	1.12	2.96		8.755	15.760		
8706	A	1	3	14.5	85.5	4.	85								994
		2	3.5	12.5	79.2	4.8	85								
		3	13.0	82.0	5.0	85									
8708	A	1	3	13.5	86.5	4.3	90							
		2	3.5	12.5	79.7	4.3	90								
		3	13.0	82.6	4.4	60									

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.		Reference.				
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile car- mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- loss.		Calo- ries.	British thermal units.	Page of this bulletin.	
WEST VIRGINIA—Continued. M'DOWELL COUNTY—continued.																		
	8707	A	1	3.1	13.5	79.5	3.9	0.60						2.3			994	
			2		14.0	82.0	4.0											
			3		14.5	85.5												
	8794	.....	1	3.2	13.0	79.7	4.12	.58	4.48	84.17	1.15	5.50	2.5	8,140	14,650	994	
			2		13.5	82.2	4.26	.60	4.20	86.96	1.19	2.73		8,410	15,130			
			3		14.0	86.0			.63	4.45	90.83	1.24	2.85		8,780	15,810		
	8666	A	1	3.2	13.5	78.1	5.2	.60						2.5			995	
			2		14.0	80.6	5.4											
			3		15.0	85.0			.65									
Kylo, Lynchburg mine, Pocahontas No. 3 bed (main entry, 86-inch cut).	8667	A	1	3.1	13.5	79.2	4.2	.50					2.4				995	
			2		14.0	81.6	4.4	.55										
			3		14.5	85.5												
	8671	A	1	3.2	14.0	78.2	4.6	.55					2.5				995	
			2		14.5	80.7	4.8	.55										
			3		15.5	84.5			.60									
	8668	A	1	3.3	15.0	77.3	4.4	.50					2.4				C95	
			2		15.5	80.0	4.5	.50										
			3		16.0	84.0			.50									
	8670	A	1	2.9	14.5	78.7	3.9	.60					2.2	8,210	14,780	995		
Same (pillar 17, North Carolina entry, 82-inch cut).			2		14.5	81.5	4.0							8,400	15,230			
			3		15.5	84.5			.65						8,810	15,800		
	8669	A	1	3.8	13.5	78.2	4.5	.55					3.1	8,050	14,490	995		
			2		14.5	80.8	4.7		.55					8,365	15,050			
			3		15.0	85.0			.60					8,770	15,690			
	8725	.....	1	3.3	14.0	78.2	4.52	.54	4.55	83.10	1.13	6.16	2.5	8,115	14,600	995	
			2		14.5	80.8	4.67	.56	4.33	85.90	1.17	3.37		8,385	15,100			
			3		15.5	84.5			.59	4.54	90.11	1.23	3.53	1.9	8,795	15,830	996	
	8662	A	1	2.59	12.96	78.60	5.85	.63										
			2		13.3	80.69	6.01		.65									
Landgraf, Empire mine, Pocahontas No. 3 bed (main entry, 7½-inch cut).	8661	A	1	2.34	12.44	80.11	5.11	.55					1.7				996	
			2		12.74	82.03	5.23	.56										
			3		13.44	86.56		.59										

	8060	A	1	2	60	12.99	70.32	5.09	64			2.0		9963
Same (diagonal entry 5, 68-inch cut).....			2	3		13.33	81.44	5.23	66					
			3			14.07	85.93		70			2.4		9965
Same (pillar, between entries 18 and 20, off first diagonal entry, 79½-inch cut),	8059	A	3		3.06	12.81	80.27	3.86	55				14,695	
			2	3		13.21	82.81	3.98	57				8,422 15,160	
Same (pillar, entry 8 off diagonal entry 1, 72½-inch cut),	8058	A	3			13.76	86.24		59				8,771 15,788	
			2	3	2.87	13.30	79.09	4.74	54			2.1		9965
			3			13.69	81.43	4.88	56				8,081 14,551	
Same (composite of Nos. 8060, 8061, and 8062)...	8099		3			14.39	85.61		59				8,322 14,980	
			2	3	2.50	12.99	79.09	5.51	58				8,749 15,748	
			3			13.23	85.98	5.65	59			1.9		9965
McDowell, McDowell mine, Pocahontas No. 3 bed (Scotland entry, 5,600 feet S. 80° E. from drift mouth, 59½-inch cut).	8499	A	3		3.14	14.81	77.84	4.21	49				8,061 14,510	
Same (Ohio entry, 6,000 feet N. 78° E. from drift mouth, 67-inch cut).	8500	A	3		3.44	14.63	80.36	4.35	51				8,267 14,881	
			2	3		15.29	80.36		49				8,702 15,772	
			3			15.15	80.83	4.02	51			2.5		997
			2	3		15.78	84.22		47					997
Same (Pennsylvania entry, 5,400 feet S. 55° E. from drift mouth, 62½-inch cut).	8501	A	3		3.35	13.9	78.05	4.67	47					
			2	3		14.39	80.78	4.83	49			2.8		997
			3			15.12	84.88		51					
Same (pillar, room 24, New York entry, 3,200 feet S. 45° E. from drift mouth, 59½-inch cut).	8502	A	3		3.13	13.55	79.06	4.26	45					
			2	3		13.99	81.61	4.4	46			2.4		997
			3			14.63	85.37		48					
Same (pillar, 5-foot cut).....	8533	A	3		3.93	13.2	76.07	6.8	43					
			2	3		13.74	79.18	7.08	45			3.1		997
			3			14.79	85.21		48					
Same (composite of Nos. 8499-8501).....	8087		3		3.28	15.06	77.5	4.16	45				8,082 14,548	997
			2	3		15.57	80.13	4.3	47			2.7		
			3			16.27	83.73		49				8,356 15,041	
Same (composite of Nos. 8533 and 8502).....	8089		3			16.27	83.73		49				8,731 15,716	
			2	3	3.30	13.37	77.71	5.62	43				7,957 14,323	997
			3			13.83	80.36	5.81	44			2.8		
1½ miles east of Greenbrier mine, Pocahontas No. 3 bed (pillar 4, off cross entry 4 off main entry 1, 59-inch cut).	8497	A	3		2.7	15.0	85.32		47				8,228 14,810	998
Same (pillar 3 on cross entry 6 off main entry 1, 60½-inch cut).	8498	A	3			14.68	85.32		47				8,736 15,725	
			2	3		15.5	80.2	4.3	45			2.2		
			3			16.0	84.0		45				8,175 14,720	998
			2	3	3.0	14.5	78.0	4.6	50			2.3		
Same (room 1 on cross entry 9 off main entry, 70½-inch cut).	8530	A	3			15.5	84.5		50					
			2	3	3.8	15.0	77.5	3.7	50				8,405 15,130	998
			3			15.5	80.6	3.9	50			3.1		
Same (cross entry 3, 65-inch cut).....	8531	A	3		3.7	16.0	84.0		55					
			2	3		15.0	77.7	3.6	50			3.0		
			3			16.0	80.3	3.7	50					
Same (cross entry 2 off entry 34, 64½-inch cut)...	8532	A	3		3.8	16.5	83.5		50					
			2	3		14.5	81.5	4.0	50			3.1		998
			3			15.0	85.0		55					
Same (composite of Nos. 8498, 8530, 8531, and 8532).	8072		3		3.8	15.5	76.9	3.82	51				8,170 14,620	998
			2	3		16.0	80.0	3.97	53			3.1		
			3			16.5	83.5		55				8,700 15,829	

Same (composite of Nos. 8507-8510).	S588	.....	1	3.97	15.75	75.6	3.65	59	4.50	83.87	1.12	5.91	3.4	8,114	14,605	.....	1000
2 miles northeast of; Anglo mine, Pocahontas No. 3 bed (main air course off entry A, 3,500 feet from drift mouth, 69½-inch cut).	8454	A	2	.....	16.43	79.77	3.80	63	4.60	87.33	1.17	2.49	.....	8,449	15,208	.....	1000
			3	.....	17.08	82.92	3.22	60	4.78	90.78	1.22	2.59	2.7	8,783	15,809	.....	1000
Same (pillar, room 6, entry 8, 4,500 feet from drift mouth, 66½-inch cut).	8455	A	2	3.57	13.41	79.8	3.34	59	.....	.....	.....	.....	.....	.....	.....	.....	1000
			3	.....	14.39	82.75	3.34	52	.....	.....	.....	.....	.....	8,094	14,560	.....	1000
Same (room 35, heading 2, 4,500 feet from drift mouth, 5-foot cut).	8456	A	2	3.70	15.00	77.23	4.07	53	.....	.....	.....	.....	3.0	8,405	15,289	.....	1000
			3	.....	15.88	80.19	4.23	55	.....	.....	.....	.....	.....	8,777	15,799	.....	1000
Same (entry 2 off Cherokee heading, 8,500 feet from drift mouth, 5½-foot cut).	8402	A	2	3.36	14.15	77.81	4.08	49	.....	.....	.....	.....	2.8	.....	.....	.....	1000
			3	.....	14.64	80.52	4.84	51	.....	.....	.....	.....	.....	.....	.....	.....	1000
Same (entry 3, 8,000 feet from drift mouth, 63½-inch cut).	8403	A	2	3.16	13.77	79.03	4.04	51	.....	.....	.....	.....	2.5	.....	.....	.....	1000
			3	.....	14.32	81.61	4.17	53	.....	.....	.....	.....	.....	.....	.....	.....	1000
Same (entry C, 8,000 feet from drift mouth, 61½-inch cut).	8401	A	2	3.78	14.22	78.33	3.67	53	.....	.....	.....	.....	3.1	.....	.....	.....	1000
			3	.....	14.78	81.41	3.81	57	.....	.....	.....	.....	.....	.....	.....	.....	1000
Same (composite of Nos. 8454, 8456, and 8401-8403).	8472	.....	2	2.89	14.09	79.64	3.98	54	.....	.....	.....	.....	2.3	.....	.....	.....	1000
			3	.....	14.51	81.39	4.10	56	.....	.....	.....	.....	.....	.....	.....	.....	1000
Norfolk mine, Pocahontas No. 3 bed (air course C-3, 2,600 feet east by 1,100 feet south, bed 8 feet 5½ inches, 97½-inch cut).	7194	A	2	3.26	15.13	83.87	3.97	54	4.70	84.02	1.02	5.09	2.7	8,166	14,699	.....	1001
			3	.....	15.77	80.84	4.10	56	4.55	87.47	1.05	2.27	.....	8,441	15,194	.....	1001
Same (400 feet off left entry 1, parallel to entry 18, 3,180 feet southwest, room 3, bed 8 feet 8½ inches, 92½-inch cut).	7193	A	2	3.59	15.02	76.13	5.26	58	4.74	91.21	1.09	2.38	3.1	7,926	14,267	.....	1001
			3	.....	15.38	78.96	5.46	39	4.55	82.46	1.12	6.22	.....	8,221	14,798	.....	1001
Same (right cross entry 2, 4,500 feet from drift mouth, 97-inch cut).	8404	A	2	3.35	14.72	78.14	3.79	45	4.30	85.53	1.16	3.15	.....	8,696	15,653	.....	1001
			3	.....	15.23	80.85	3.92	47	4.79	84.38	1.13	5.46	2.8	8,150	14,670	.....	1001
Same (room 7, entry C-4, 4,000 feet from drift mouth, 10½-inch cut).	8405	A	2	3.87	14.02	78.38	3.73	55	4.7	87.31	1.22	2.66	3.2	8,433	15,179	.....	1001
			3	.....	14.59	81.53	3.88	57	.....	.....	.....	.....	.....	8,777	15,799	.....	1001
Same (room 9, entry B-1, 2,500 feet from drift mouth, 97½-inch cut).	8406	A	2	3.45	15.23	77.89	3.43	52	.....	.....	.....	.....	2.9	.....	.....	.....	1001
			3	.....	15.77	80.68	3.55	54	.....	.....	.....	.....	.....	.....	.....	.....	1001
Same (chain pillar old main entry, 3,200 feet from drift mouth, 87½-inch cut).	8332	A	2	3.08	16.35	83.65	3.20	56	.....	.....	.....	.....	2.4	.....	.....	.....	1001
			3	.....	15.82	80.88	3.30	57	.....	.....	.....	.....	.....	.....	.....	.....	1001
Same (right cross entry 1, 4,000 feet from drift mouth, 7½-foot cut).	8331	A	2	4.49	14.31	77.99	3.21	49	4.57	87.31	1.17	2.56	3.8	8,433	15,179	.....	1001
			3	.....	14.98	81.66	3.36	49	.....	.....	.....	.....	.....	.....	.....	.....	1001
Same (heading 2, 4,500 feet from drift mouth, 86½-inch cut).	8330	A	2	3.95	15.29	77.2	3.56	51	.....	.....	.....	.....	3.4	.....	.....	.....	1001
			3	.....	15.92	80.37	3.71	53	.....	.....	.....	.....	.....	.....	.....	.....	1001
Same (composite of Nos. 8404-8406 and 8330-8332).	8420	.....	2	3.62	15.08	77.02	3.68	50	.....	.....	.....	.....	3.0	.....	.....	.....	1001
			3	.....	16.27	79.91	3.82	52	.....	.....	.....	.....	.....	.....	.....	.....	1001
			2	3.73	16.92	83.08	3.43	54	4.87	84.40	1.09	5.68	3.1	8,129	14,632	.....	1001
			3	.....	15.19	78.22	3.56	55	4.63	87.67	1.13	2.46	.....	8,444	15,199	.....	1001
			3	.....	15.75	84.25	.....	57	4.80	90.91	1.17	2.55	.....	8,756	15,701	.....	1001

Table of chemical analyses—Continued.

Sample.		Proximate.					Ultimate.				Calorific value.		Reference.					
		Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.		Oxy- gen.	Air- dry- ing loss.	Calo- ries.	British thermal units.	
WEST VIRGINIA—Continued.																		
M'DOWELL COUNTY—continued.																		
Northfork, Northfork mine, Pocahontas No. 3 bed (Burke entry, 900 feet from drift mouth, 7½-inch cut).		8776	A	1	2.9	13.0	79.0	5.05	0.63	4.46	83.70	1.06	5.10	2.2	8,090	14,560	.....	1003
				2	.....	13.5	81.3	5.2	.....	4.26	86.16	1.09	2.64	.....	8,325	14,990	.....	1003
				3	.....	14.5	85.5	.....	.....	69	90.89	1.15	2.78	.....	8,785	15,810	.....	1003
Same (pillar 11 on dip entry, 5-foot cut).....		8777	A	1	4.5	14.5	77.0	4.0	.....	.....	.....	.....	.....	4.0	8,030	14,460	.....	1003
				2	.....	15.0	80.8	4.2	.....	.....	.....	.....	.....	.....	8,410	15,140	.....	1004
				3	.....	15.5	84.5	.....	.....	.....	.....	.....	.....	.....	8,780	15,800	.....	1004
Pageton, Page No. 1 mine, Pocahontas No. 3 bed (pillar, room 32, right cross entry 1, 2,700 feet from drift mouth, 7½-foot cut).		8521	A	1	4.2	13.5	78.7	3.6	.....	.....	.....	.....	.....	3.6	8,070	14,520	.....	1004
				2	.....	14.0	82.3	3.7	.....	.....	.....	.....	.....	.....	8,420	15,150	.....	1004
				3	.....	14.5	85.5	.....	.....	.....	.....	.....	.....	.....	8,740	15,730	.....	1004
Same (room 33, right cross entry 4, 3,300 feet from drift mouth, 8½-inch cut).		8522	A	1	3.5	13.0	80.4	3.1	.....	.....	.....	.....	.....	3.0	.....	.....	.....	1004
				2	.....	13.5	83.3	3.2	.....	.....	.....	.....	.....	.....	.....	.....	.....	1004
				3	.....	14.0	86.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1004
Same (room 21 on right cross entry 6, 3,800 feet from drift mouth, 87½-inch cut).		8523	A	1	3.3	13.5	80.2	3.0	.....	.....	.....	.....	.....	2.7	.....	.....	.....	1004
				2	.....	14.0	82.9	3.1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1004
				3	.....	14.5	85.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1004
Same (left entry 6, 2,400 feet from drift mouth, 84½-inch cut).		8541	A	1	3.0	13.0	80.2	3.8	.....	.....	.....	.....	.....	2.4	.....	.....	.....	1004
				2	.....	13.5	82.6	3.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	1004
				3	.....	14.0	86.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1004
Same (composite of Nos. 8522, 8523, and 8541).....		8678	.....	1	3.3	13.5	80.1	3.11	.....	4.54	84.72	1.16	5.83	2.7	8,200	14,760	.....	1004
				2	.....	14.0	82.8	3.22	.....	4.31	87.63	1.20	2.98	.....	8,485	15,270	.....	1004
				3	.....	14.5	85.5	.....	.....	4.45	90.55	1.24	3.08	.....	8,765	15,780	.....	1004
Page No. 2 mine, Pocahontas No. 3 bed (cross entry 2, 1,700 feet from drift mouth, 7½-foot cut).		8537	A	1	4.1	12.5	79.1	4.3	.....	.....	.....	.....	.....	3.4	.....	.....	.....	1004
				2	.....	13.0	82.6	4.4	.....	.....	.....	.....	.....	.....	.....	.....	.....	1004
				3	.....	13.5	86.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1004
Same (main entry, 1,600 feet from drift mouth, 92½-inch cut).		8536	A	1	3.6	13.0	78.2	5.2	.....	.....	.....	.....	.....	2.9	.....	.....	.....	1004
				2	.....	13.5	81.1	5.4	.....	.....	.....	.....	.....	.....	.....	.....	.....	1004
				3	.....	14.5	85.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1004
Same (room 9 on cross entry 1, 1,200 feet from drift mouth, 91½-inch cut).		8535	A	1	3.5	13.0	79.7	3.8	.....	.....	.....	.....	.....	2.9	.....	.....	.....	1004
				2	.....	13.5	82.5	4.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	1004
				3	.....	14.0	86.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1004
Same (composite of Nos. 8535-8537).....		8684	.....	1	3.7	12.5	79.5	4.26	.....	4.55	83.71	1.11	5.71	3.1	8,045	14,480	.....	1004
				2	.....	13.0	82.6	4.42	.....	4.30	86.88	1.15	2.56	.....	8,350	15,030	.....	1004
				3	.....	13.5	86.5	.....	.....	4.50	90.89	1.20	2.69	.....	8,735	15,720	.....	1004

Page No.	3	mine, Pocahontas No. 3 bed (main entry 2,300 feet from drift mouth, 83-inch cut).	8540	A	1	2	3	3.9	12.5	79.4	4.2	4.2	55	3.2	1001
	8539	Same (room 9, cross entry 4, 1,700 feet from drift mouth, 78½-inch cut).	8539	A	1	2	3	3.2	14.0	86.0	4.3	4.3	60	2.6	1004
	8538	Same (right cross entry 2, 2,100 feet from drift mouth, 82-inch cut).	8538	A	1	2	3	3.6	15.0	85.0	4.4	4.4	70	2.9	1004
	8685	Same (composite of Nos. 8538-8540).	8685		1	2	3	3.5	13.0	82.8	4.2	4.2	60		1004
	8329	Powhatan mine, Pocahontas No. 3 bed (pillar, room 3, left entry 5, 1,800 feet from drift mouth, 73½-inch cut).	8329	A	1	2	3	2.55	13.49	80.63	4.12	4.12	61	2.9	1004
	8328	Same (left entry 8½, 2,400 feet from drift mouth, 83-inch cut).	8328	A	1	2	3	2.8	13.5	79.2	4.5	4.5	55	2.2	1005
	8327	Same (left entry 12, 5,700 feet from drift mouth, 70-inch cut).	8327	A	1	2	3	3.4	14.5	85.5	4.3	4.3	60	2.8	1005
	8448	Same (pillar, room 9, on right entry 7, 3,300 feet from drift mouth, 71½-inch cut).	8448	A	1	2	3	2.76	13.05	79.77	4.42	4.42	60	2.0	1005
	8449	Same (room 25, right entry 8½, 3,800 feet from drift mouth, 83½-inch cut).	8449	A	1	2	3	3.0	13.0	78.9	5.1	5.1	65	2.4	1005
	8450	Same (right entry 12, 5,600 feet from drift mouth, 71½-inch cut).	8450	A	1	2	3	3.3	14.5	85.5	4.1	4.1	45	2.7	1005
	8427	Same (composite of Nos. 8327, 8328, 8449, and 8450).	8427		1	2	3	3.3	14.5	85.5	4.3	4.3	50		1005
	650	Roderfield, 6 miles from: Premier Pocahontas No. 1 mine, Welch or No. 6 bed (right 1 off left entry 2, 1,150 feet southeast of drift mouth, 39½-inch cut).	650	A	1	2	3	2.70	18.50	75.50	5.30	5.30	60	2.5	1006
	649	Same (right entry 3, off main heading, 1,300 feet south of drift mouth, 34½-inch cut).	649	A	1	2	3	2.30	18.00	72.60	7.10	7.10	60		1007
	651	6 miles southeast of: Premier Pocahontas No. 2 mine, Welch or No. 6 bed (slope of left entry 2, 1,600 feet east of drift mouth, 52½-inch cut).	651	A	1	2	3	2.40	16.50	73.90	7.40	7.40	70		1007
	652	Same (left entry 1, 1,400 feet east of drift mouth, 47½-inch cut).	652	A	1	2	3	2.00	18.00	76.00	6.00	6.00	55		1007
	654	7 miles southeast of: Premier Pocahontas No. 3 mine, Welch or No. 6 bed (left entry 2, 1,300 feet east of drift mouth, 41½-inch cut).	654	A	1	2	3	2.10	18.00	74.00	5.30	5.30	65		1008
	653	Same (slope of left entry 1, 900 feet northeast of drift mouth, 48½-inch cut).	653	A	1	2	3	1.80	19.55	80.45	5.30	5.30	55		1008
					1	2	3	1.80	18.50	76.10	5.40	5.40	55		1008
					1	2	3	1.55	19.55	80.45			58		1008

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Same (old main entry, 6,400 feet from drift mouth, 92-inch cut).	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Same (entry 14-1, 6,400 feet from drift mouth, 74-inch cut).	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Same (chain pillar, near room 8, on left entry 12, 87½-inch cut).	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Same (composite of Nos. 8398-8400 and 8442)....	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Same (composite of Nos. 8441 and 8443).....	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Same (composite of Nos. 8443).....	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
2 mile south of Lick Branch mine, 1 mile west of drift mouth, entry 9, Pocahontas No. 3 bed, 10½-inch cut.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Same (room 3, entry 2, 1,500 feet from drift mouth, 95-inch cut).	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Same (straight entry 8, 2,500 feet from drift mouth, 94½-inch cut).	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Same (room 19, entry 8-1, 3,500 feet from drift mouth, 95-inch cut).	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Same (chain pillar, left entry 9, near room 28, 6,200 feet southeast of drift mouth, 91½-inch cut).	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Same (pillar, room 13, left entry 9, 5,200 feet southeast of drift mouth, 86-inch cut).	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Same (composite of Nos. 8378-8380).....	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Same (composite of Nos. 8358 and 8359).....	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Twin Branch, Twin Branch mine, Sewell bed (pillar, right entry 4 of main entry, 2,600 feet N. 80° E. from drift mouth, 34-foot cut).	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Same (right entry 8 of main entry, 3,800 feet N. 65° E. of drift mouth, 35-inch cut).	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87													

	8583	A	1	2	2.2	12.5	79.8	5.5	60	1.6	1014
Same (break-through, cross entry 9, 12,500 feet N. 63° E. of drift mouth, 65-inch cut).	8583	A	1	2	2.2	12.5	79.8	5.5	60	1.6	1014
Same (composite of Nos. 8571 and 8584).....	8573		3	3	13.5	81.9	5.6	65	66	2.2	1014
Same (composite of Nos. 8581-8583).....	8574		2	3	12.5	86.5	4.31	4.44	66	2.2	1014
			2	3	12.5	83.1	4.44	4.37	71	2.1	1015
			2	3	13.5	86.5	5.05	4.33	61	2.1	1015
			2	3	13.5	79.2	5.19	4.14	63	2.1	1015
			2	3	14.5	85.5	4.1	4.37	66	2.1	1015
			2	3	13.0	80.2	4.2	4.37	66	2.1	1015
Tidewater mine, Pecabontas No. 3 bed (pillar 2 off cross entry 1, 60½-inch cut).	8573	A	2	3	13.5	82.3	4.2	4.2	60	1.3	1015
			2	3	14.0	86.0	4.8	4.8	60	1.3	1015
Same (pillar, near room 16, cross entry 3 off main entry, 62½-inch cut).	8574	A	1	2	1.9	79.8	4.9	4.9	60	1.8	1015
			2	3	14.0	81.1	4.6	4.6	60	1.8	1015
Same (pillar 10, off cross entry 9 off main entry, 61½-inch cut).	8575	A	2	3	14.5	85.5	4.5	4.5	60	2.3	1015
			2	3	13.0	80.1	4.6	4.6	60	2.3	1015
Same (main entry, 60½-inch cut).....	8576	A	2	3	14.0	86.0	4.5	4.5	60	2.5	1015
			2	3	13.0	79.7	4.5	4.5	60	2.5	1015
Same (north entry 3 off cross entry 11, 61½-inch cut).	8577	A	2	3	13.5	81.9	4.6	4.6	65	2.2	1015
			2	3	13.0	78.6	5.3	5.3	70	2.2	1015
Same (north entry 7 off cross entry 10, 57½-inch cut).	8524	A	2	3	13.5	81.0	5.5	5.5	70	2.0	1015
			2	3	14.0	86.0	4.7	4.7	65	2.0	1015
Same (composite of Nos. 8573-8575).....	8681		3	3	14.5	80.7	4.8	4.8	65	1.7	1015
			3	3	15.0	85.0	4.44	4.44	58	1.7	1015
Same (composite of Nos. 8576, 8577, and 8524).....	8680		2	3	12.5	80.8	4.54	4.54	59	2.3	1015
			2	3	13.0	82.5	4.75	4.75	62	2.3	1015
			2	3	12.9	79.3	4.89	4.89	64	2.0	1015
			2	3	13.0	82.1	5.4	5.4	66	2.0	1015
			2	3	14.0	86.0	4.78	4.78	55	2.0	1015
			2	3	13.5	80.5	5.5	5.5	63	2.0	1015
			2	3	15.0	85.0	5.5	5.5	60	2.0	1015
West Vivian, 1 mile west of King mine, Pocabontas No. 3 bed (south air course 2 off cross entry 1 off main entry, 2,900 feet east of slope, 61½-inch cut).											
Same (cross entry 1, 4,600 feet N. 80° E. of slope, 62-inch cut).	8688	A	1	2	2.7	78.4	5.4	5.4	55	2.0	1016
			2	3	14.5	80.8	5.7	5.7	55	2.0	1016
Same (main air course, 5,200 feet N. 45° E. of slope, 59-inch cut).	8694	A	1	2	2.6	77.4	5.5	5.5	55	1.5	1016
			2	3	15.0	79.3	5.2	5.2	55	1.5	1016
Same (main air course, 5,200 feet N. 45° E. of slope, 59-inch cut).	8695	A	1	2	2.1	79.7	5.3	5.3	55	1.3	1016
			2	3	14.5	86.5	4.9	4.9	55	1.3	1016
Same (room 12 on north entry 3 off switchback entry, 5,300 feet S. 75° E. of slope, 61½-inch cut).	8697	A	1	2	1.9	79.2	5.0	5.0	60	1.8	1016
			2	3	15.0	85.0	4.7	4.7	60	1.8	1016
Same (north entry 4 off switchback entry, 4,600 feet S. 85° E. of slope, 61½-inch cut).	8698	A	1	2	2.4	78.9	4.8	4.8	60	1.9	1016
			2	3	14.0	81.2	5.0	5.0	70	1.9	1016
Same (room 31 on north entry 3 off switchback entry, 4,700 feet S. 55° E. of slope, 67-inch cut).	8699	A	1	2	2.6	78.4	5.2	5.2	70	1.9	1016
			2	3	14.5	80.3	5.2	5.2	75	1.9	1016
			2	3	15.0	85.0	5.2	5.2	75	1.9	1016

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.		Reference.		
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.		Calo- ries.	British thermal units.
WEST VIRGINIA—Continued.																
M'DOWELL COUNTY—continued.																
West Vivian, King mine—Continued. Same (composite of Nos. 8648, 8688, 8694, and 8695).	8723	.....	1	2.5	13.5	78.9	5.11	0.56	4.39	84.39	1.13	4.42	1.8	8,100	14,580	1016
			2	.....	14.0	80.8	5.24	.57	4.23	86.54	1.16	2.26	.....	8,305	14,950	.....
			3	.....	15.0	85.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Worth, $\frac{1}{2}$ mile northwest of; Indian Ridge mine, Poca- hontas No. 3 bed (pillar 106, off cross entry 3, 49 $\frac{1}{2}$ -inch cut).	8360	A	1	2.9	14.0	75.7	7.4	.40	4.46	91.33	1.22	2.39	2.2	8,765	15,780	1017
			2	.....	14.5	77.9	7.6	.45	.....	.....	.....	.....	.....	.....	.....	.....
			3	.....	15.5	84.5	.....	.45	.....	.....	.....	.....	.....	.....	.....	.....
Same (butt entry 3 off Salem air course, 52 $\frac{1}{2}$ - inch cut).	8361	A	1	3.3	14.5	78.0	4.2	.40	4.35	88.7	1.07	4.3	2.6	.....	.....	1017
			2	.....	15.0	80.7	4.3	.40	.....	.....	.....	.....	.....	.....	.....	.....
			3	.....	15.5	84.5	.....	.45	.....	.....	.....	.....	.....	.....	.....	.....
Same (north entry 4, 51 $\frac{1}{2}$ -inch cut).....	8525	A	1	2.4	13.5	80.7	3.4	.50	4.45	.....	.....	.....	1.8	.....	.....	1017
			2	.....	14.0	82.6	3.4	.50	.....	.....	.....	.....	.....	.....	.....	.....
			3	.....	14.5	85.5	.....	.55	.....	.....	.....	.....	.....	.....	.....	.....
Same (last butt entry off Roanoke heading, 54 $\frac{1}{2}$ - inch cut).	8362	A	1	3.0	14.0	76.9	6.1	.50	4.50	.....	.....	.....	.....	.....	.....	1017
			2	.....	14.5	79.3	6.2	.55	.....	.....	.....	.....	.....	.....	.....	.....
			3	.....	15.5	84.5	.....	.60	.....	.....	.....	.....	.....	.....	.....	.....
Same (composite of Nos. 8360-8362 and 8525)...	8592	.....	1	3.0	13.0	78.8	5.23	.48	4.46	82.84	1.05	5.94	2.3	8,055	14,500	1017
			2	.....	13.5	81.1	5.39	.50	4.25	85.43	1.08	3.35	.....	8,365	14,960	.....
			3	.....	14.5	85.5	.....	.53	4.49	90.30	1.14	3.54	.....	8,780	15,800	.....
Zenith (Crumpler station), about 4 miles northeast of McDowell, Pocahontas No. 3 bed (Zenith No. 1 mine, 51-inch cut).	1234	A	1	2.21	18.28	74.26	5.25	.44	.....	.....	.....	.....	1.5	8,404	14,792	261
			2	.....	18.69	75.94	5.37	.45	.....	.....	.....	.....	.....	8,218	14,792	332
Same (Zenith No. 2 mine, 52 $\frac{1}{2}$ -inch cut).....	1235	A	1	3.65	18.26	74.12	4.57	.58	.....	.....	.....	.....	.....	8,404	15,127	1018
			2	.....	18.83	76.46	4.71	.52	.....	.....	.....	.....	.....	8,880	15,984	1018
			3	.....	19.76	80.24	.....	.55	.....	.....	.....	.....	.....	.....	.....	.....
Same (Zenith mines 1 and 2, run of mine).....	1472	C	1	4.07	16.34	68.47	11.12	.51	4.27	76.51	1.00	6.59	3.3	7,505	13,569	261
			2	.....	17.03	71.38	11.59	.53	3.98	79.75	1.04	3.11	.....	7,823	14,081	48
			3	.....	19.26	80.74	.....	.60	4.50	90.21	1.18	3.51	.....	8,849	15,928	332
Same (bone coal).....	4231	C	1	1.02	9.08	44.47	45.43	.30	.....	.....	.....	.....	.....	.....	.....	.....
			2	.....	9.17	44.93	45.90	.30	.....	.....	.....	.....	.....	.....	.....	.....
MARION COUNTY.																
Kingmont, west bank of Tygart River, Kingmont mine, Pittsburgh bed (room 20 on right entry 2, 87 $\frac{1}{2}$ -inch section, 86-inch cut).	1088	A	1	1.40	36.65	55.28	6.67	1.59	.....	.....	1.43	.....	.4	7,813	14,063	261
			2	.....	37.17	56.07	6.76	1.61	.....	.....	1.45	.....	.....	7,924	14,263	48
			3	.....	39.86	60.14	.....	1.73	.....	.....	1.56	.....	.....	8,499	15,298	1018

Table of chemical analyses—Continued.

Sample.			Proximate.						Ultimate.				Calorific value.		Reference.	
Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.	British thermal units.	Page of this bulletin.	
WEST VIRGINIA—Continued.																
MERCER COUNTY—continued.																
Coopers, Pocahontas No. 3 bed (pillar, room 4, on cross entry 2, 107-inch cut). Same (Taber entry, 800 feet north of Taylor entry, 74-foot cut).	A	1	4.47	14.58	76.09	4.86	0.69					3.8	7,920	14,256	1021	
		2	15.26	79.65	5.09	76								8,291	14,924	
		3	16.08	83.92											8,735	15,023
Same (pillar, room 17, on Keystone entry, 83- foot cut).	A	1	3.78	15.40	76.80	4.02	84	4.69	81.04	1.15	5.26	3.1	8,118	14,612	1021	
		2	16.01	79.81	4.18	87	4.44	87.34	1.20	1.97				8,437	15,187	
		3	16.71	83.29		91	4.63	91.15	1.25	2.06				8,805	15,849	1021
West Mill Creek mine, Pocahontas No. 3 bed (pillar, room 16, on Gammon's entry, 110-inch cut).	A	1	2.92	16.08	76.14	4.86	87					2.2			1021	
		2	16.56	78.43	5.01	90										
		3	17.43	82.57		95							3.0			1021
Same (pillar, room 17, on Keystone entry, 83- foot cut).	A	1	3.72	15.63	75.79	4.86	81								1021	
		2	16.23	78.72	5.05	84										
		3	17.09	82.91		88										1021
Same (tunnel entry, heading for entry 7, 109- inch cut).	A	1	3.25	15.38	77.57	3.80	80					2.5			1021	
		2	15.90	80.17	3.93	83										
		3	16.55	83.45		86										1021
Same (pillar, room 9, on Jackson entry, in west fork drift, 107½-inch cut).	A	1	2.98	16.35	76.74	3.93	65					2.3	8,164	14,695	1021	
		2	16.85	79.10	4.05	67								8,415	15,147	
		3	17.56	82.44		70								8,770	15,785	1021
Same (composite of Nos. 8392, 8394, and 8395).	A	1	3.20	15.69	76.49	4.62	83	4.83	82.96	1.10	5.66	2.6	8,060	14,508	1021	
		2	16.21	79.02	4.77	86	4.62	85.71	1.14	2.90			8,327	14,989		
		3	17.02	82.98		90	4.85	90.00	1.20	3.05			2.5	8,744	15,739	1023
Goodwill, ½ mile north of Goodwill mine, Pocahontas No. 3 bed (cross entry 3, off Jewell's haulway, 2,200 feet north of the drift mouth, 503-inch cut).	A	1	3.3	15.0	78.4	3.3	55								1023	
		2	15.5	81.1	3.4	60										
		3	16.0	84.0		60										1023
Same (Smith's entry, 2,900 feet northeast of drift mouth, 534-inch cut).	A	1	2.8	15.5	77.7	4.0	60					2.0			1023	
		2	16.0	79.9	4.1	60										
		3	17.0	83.0		65										1023
Same (pillar, room 1, middle drift, 2,500 feet N. 80° E. of drift mouth, 524-inch cut).	A	1	2.9	15.5	77.8	3.8	55					2.0	8,185	14,730	1023	
		2	16.0	80.0	4.0	50								8,430	15,170	
		3	16.5	83.5		53								8,775	15,700	1023
Same (composite of Nos. 8712 and 8718).	A	1	3.1	15.5	77.6	3.77	56	4.72	81.93	1.03	4.99	2.3	8,175	14,720	1023	
		2	16.0	80.1	3.89	58	4.81	87.66	1.06	2.30			2.40	8,440	15,160	
		3	16.5	83.5		60	4.69	91.21	1.10	2.40				8,780	15,810	1023

1/4 mile northwest of; Louisville No. 2 mine, Pocahontas No. 3 bed, (room 11, on left entry 6, 4,300 feet N. 40° E. of drift mouth, 52 1/2-inch cut).	8717	A	1	3.1	14.0	79.5	3.4	55	2.3	1024
Same (pillar, room 22, off left entry 4, 3,350 feet N. 15° E. of drift mouth, 44-foot cut).	8721	A	2	3.0	14.5	79.2	3.3	55	2.3	1024
Same (left air course 7, 4,500 feet N. 45° E. of drift mouth, 51 1/2-inch cut).	8715	A	1	3.0	13.5	80.0	4.1	55	2.1	1024
Same (left entry 3 1/2, cut-off, 2,750 feet north of drift mouth, 4 3/4-foot cut).	8719	A	3	2.9	13.5	80.1	3.5	55	2.1	1024
Same (pillar, room 3, on right entry 5, 3,300 feet N. 45° E. from drift mouth, 50 1/2-inch cut).	8720	A	2	3.0	13.5	80.1	3.4	55	2.2	1024
Same (composite of Nos. 8715, 8717, and 8719) ..	8791	.....	3	2.9	14.5	85.5	3.68	53	2.2	1024
Same (composite of Nos. 8720 and 8721)	8790	.....	2	3.0	14.5	85.0	3.79	55	2.3	1024
1 mile northwest of; Louisville No. 3 mine, Pocahontas No. 3 bed (right entry 4, 1,700 feet N. 15° W. of drift mouth, 61 1/2-inch cut).	8714	A	1	3.0	14.0	79.5	3.46	56	2.3	1024
Same (pillar, left entry 3, 1,400 feet N. 80° W. from drift mouth, 57 1/2-inch cut).	8716	A	2	3.1	14.5	85.5	3.6	55	2.3	1024
Hiawatha, Hiawatha mine, Pocahontas No. 3 bed (left air course 1, 1,300 feet north of drift mouth, 53 1/2-inch cut).	8374	A	3	3.58	12.23	79.35	4.84	61	2.8	1025
Same (room 3 on left entry 2, 1,400 feet north-east of drift mouth, 53 1/2-inch cut).	8375	A	2	3.20	12.27	79.80	4.73	65	2.4	1025
Same (main entry, 2,400 feet northeast of drift mouth, 53 1/2-inch cut).	8376	A	3	3.86	13.33	86.67	4.89	70	2.9	1025
Same (pillar, room 12 on right entry 2, 1,800 feet east of drift mouth, 53 1/2-inch cut).	8377	A	2	3.43	13.49	86.51	6.09	68	2.7	1025
Same (composite of Nos. 8374-8377)	8461	.....	3	3.41	13.24	86.76	6.14	67	2.7	1025
Mora (McComas post office), experimental drift, No. 6 bed (midway between entrance and face of drift, 37 1/2-inch cut).	1244	A	2	2.63	19.03	74.74	3.13	59	2.3	1026
Same (face of drift, 47-inch cut)	1240	A	3	2.91	18.10	75.34	3.62	48	2.4	1026
Same (over 3-inch screen)	1471	C	3	1.75	18.69	75.08	4.58	56	1.1	1026
			3	3.0	18.02	76.42	4.66	57	1.1	1026
			4	3.0	19.85	80.15	4.79	60	2.81	1026

Table of chemical analyses—Continued.

Sample.		Proximate.						Ultimate.				Calorific value.		Reference.					
		Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.		Air- dry- loss.	Calo- ries.	British thermal units.	Bul- letin No.	Page of this bulle- tin.
WEST VIRGINIA—Continued.																			
MERCER COUNTY—continued.																			
Mora, experimental drift—Continued.																			
1 1/2 mile west of Cranio Creek Nos. 1 and 2 mines, Pocahontas No. 3 bed (cross entry 14, 3,200 feet northwest of drift mouth, 50 1/2-inch cut). Same (main heading 1, 4,300 feet north of drift mouth, 50 1/2-inch cut).	10413	A	1	3.44	16.06	77.01	3.49	0.58	.....	.....	.....	.....	.....	3.1	8,155	14,679	.....	1026
	10413	A	2	.....	16.63	79.76	3.61	.....	.....	.....	.....	.....	.....	.....	8,445	15,201	.....	1026
	10414	A	1	3.14	16.78	76.06	4.02	2.7	8,154	14,677	1026
Same (chain pillar, room 10, between cross entries 1 and 2, main heading, 1,400 feet northeast of drift mouth, 49 1/2-inch cut). Same (Ozark heading, 4,400 feet northeast of drift mouth, 54-inch cut).	10416	A	3	3.96	18.08	81.92	4.15	.....	.....	.....	.....	.....	.....	3.5	8,782	15,808	.....	1026
	10416	A	2	.....	15.96	75.61	4.47	.....	.....	.....	.....	.....	.....	.....	8,050	14,490	.....	1026
	10415	A	1	.....	16.62	78.73	4.65	.....	.....	.....	.....	.....	.....	.....	8,381	15,086	.....	1026
Same (Pen entry, 4,800 feet north of drift mouth, 51 1/2-inch cut). Same (composite of Nos. 10413-10417).	10417	A	3	3.36	17.43	82.57	4.43	.....	.....	.....	.....	.....	.....	2.9	8,067	14,521	.....	1026
	10417	A	2	.....	16.59	75.62	4.58	.....	.....	.....	.....	.....	.....	.....	8,790	15,822	.....	1026
	10417	A	1	2.73	17.17	78.25	4.43	.....	.....	.....	.....	.....	.....	.....	8,348	14,926	.....	1026
1 mile north of Pinnacle mine, Pocahontas No. 3 bed (cross entry 1, 3,300 feet east of drift mouth, 44 1/2-inch cut). Same (pillar on right entry 4, off entry 13, 1,500 feet northeast of drift mouth, 52 1/2-inch cut).	10436	A	3	.....	17.99	82.01	5.02	.....	.....	.....	.....	.....	.....	2.3	8,749	15,748	.....	1026
	10436	A	2	.....	15.77	76.48	5.16	.....	.....	.....	.....	.....	.....	.....	8,089	14,560	.....	1026
	10418	A	1	3.43	16.21	78.63	5.16	.....	.....	.....	.....	.....	.....	.....	8,316	14,969	.....	1026
Same (pillar on right entry 4, off entry 13, 1,500 feet northeast of drift mouth, 52 1/2-inch cut). Same (Thomas heading, 3,600 feet north of drift mouth, 49 1/2-inch cut).	10418	A	3	2.96	17.09	82.91	4.32	.....	.....	.....	.....	.....	.....	2.9	8,102	14,584	.....	1026
	10418	A	2	.....	16.58	78.95	4.47	.....	.....	.....	.....	.....	.....	.....	8,390	15,102	.....	1027
	10419	A	1	.....	17.36	82.64	.....	.....	.....	.....	.....	.....	.....	.....	8,783	15,809	.....	1027
Same (Cobbler heading off main heading 2, 2,900 feet east of drift mouth, 43 1/2-inch cut). Same (pillar 2, on cross entry 8, main heading 1, 2,400 feet southeast of drift mouth, 48-inch cut).	10419	A	3	3.22	16.35	80.33	3.32	.....	.....	.....	.....	.....	.....	2.5	8,249	14,848	.....	1027
	10419	A	2	.....	16.91	83.09	.....	.....	.....	.....	.....	.....	.....	.....	8,500	15,300	.....	1027
	10420	A	1	.....	16.07	77.44	3.27	.....	.....	.....	.....	.....	.....	.....	8,792	15,826	.....	1027
Same (Cobbler heading off main heading 2, 2,900 feet east of drift mouth, 43 1/2-inch cut). Same (pillar 2, on cross entry 8, main heading 1, 2,400 feet southeast of drift mouth, 48-inch cut).	10420	A	3	3.22	16.61	80.01	3.38	.....	.....	.....	.....	.....	.....	2.8	8,210	14,778	.....	1027
	10420	A	2	.....	17.19	82.81	.....	.....	.....	.....	.....	.....	.....	.....	8,483	15,269	.....	1027
	10421	A	1	3.73	16.05	80.50	3.42	.....	.....	.....	.....	.....	.....	.....	8,780	15,804	.....	1027
Same (Cobbler heading off main heading 2, 2,900 feet east of drift mouth, 43 1/2-inch cut). Same (pillar 2, on cross entry 8, main heading 1, 2,400 feet southeast of drift mouth, 48-inch cut).	10421	A	3	.....	16.65	83.35	.....	.....	.....	.....	.....	.....	.....	3.4	8,151	14,672	.....	1027
	10421	A	2	.....	16.65	83.35	.....	.....	.....	.....	.....	.....	.....	.....	8,466	15,239	.....	1027
	10422	A	1	2.82	16.11	77.26	3.81	.....	.....	.....	.....	.....	.....	.....	8,765	15,779	.....	1027
Same (pillar 2, on cross entry 8, main heading 1, 2,400 feet southeast of drift mouth, 48-inch cut).	10422	A	3	.....	16.58	79.50	3.92	.....	.....	.....	.....	.....	.....	2.5	8,409	15,136	.....	1027
	10422	A	2	.....	17.25	82.74	.....	.....	.....	.....	.....	.....	.....	.....	8,752	15,754	.....	1027
	10422	A	1	2.81	16.20	77.73	3.26	.....	.....	.....	.....	.....	.....	.....	8,476	15,257	.....	1027
	10422	A	3	.....	17.23	82.77	.....	.....	.....	.....	.....	.....	.....	.....	8,770	15,786	.....	1027

Same (composite of Nos. 10418-10422).....	10437	A	1	3.40	16.16	76.99	3.45	.51	4.86	85.04	1.09	5.05	2.9	8.165	14.697	1027
Simmons, 14 miles northwest of; Buckeye mine, Poca- hontas No. 3 bed (Simmons's entry, 72½-inch cut).	8564	A	2	4.5	17.35	79.70	3.57	.53	4.64	88.03	1.13	2.10	.....	8.452	15.214	1028
Same (cross entry 7 off Simmons's entry, 5½-foot cut).	8565	A	2	4.4	15.0	78.5	3.5	.85	4.81	91.29	1.17	2.18	3.8	8.765	15.777	1028
Same (room 10 off cross entry 5, 5½-foot cut)....	8566	A	3	3.7	13.0	79.6	3.7	.95	.....	.....	.....	.....	3.8	.....	.....	1028
Same (pillar, room 11 on Newman entry, 67½- inch cut).	8570	A	3	3.5	14.0	86.0	3.1	.85	.....	.....	.....	.....	3.1	.....	.....	1028
Same (room 8, on Bennett's entry, 67½-inch cut).	8567	A	3	3.7	14.0	79.3	3.0	.80	.....	.....	.....	.....	3.1	.....	.....	1028
Same (Price's entry, 5½-foot cut).....	8568	A	3	4.6	13.5	79.1	2.8	.90	.....	.....	.....	.....	4.1	.....	.....	1028
Same (room 11 on cross entry 3, 58½-inch cut)...	8569	A	3	3.3	14.0	79.0	3.0	.65	.....	.....	.....	.....	2.5	.....	.....	1028
Same (composite of Nos. 8564-8569).....	8675	.....	3	3.8	13.5	79.4	3.34	.80	4.78	82.67	1.11	7.30	3.4	8.150	14.670	1028
2 miles northwest of; Booth-Bowen mine, Poca- hontas No. 3 bed (entry 9 off Bird Hunter's entry, 68-inch cut).	8549	A	3	3.7	14.0	82.5	3.47	.83	4.52	85.97	1.15	4.06	.....	8.475	15.250	1029
Same (entry 6 off Bird Hunter's entry, 55½-inch cut).	8550	A	3	3.7	14.0	77.6	4.7	.60	4.68	89.06	1.19	4.21	3.0	8.780	15.800	1029
Same (butt entry 9 off Kansas City entry, 55½-inch cut).	8551	A	3	3.2	13.0	80.2	3.6	.55	.....	.....	.....	.....	2.6	.....	.....	1029
Same (pillar, room 9 on Yukon entry, 84½-inch cut).	8552	A	3	3.2	13.5	79.6	3.7	.55	.....	.....	.....	.....	2.6	.....	.....	1029
Same (pillar 3 on entry 35, 97½-inch cut).....	8553	A	3	2.2	15.0	79.2	3.9	.60	.....	.....	.....	.....	1.6	.....	.....	1029
Same (pillar, room 21 on Meadow's entry, 84½-inch cut).	8554	A	3	2.9	14.5	78.5	4.1	.55	.....	.....	.....	.....	2.3	.....	.....	1029
Same (composite of Nos. 8549-8551).....	8683	.....	3	3.4	13.5	79.0	4.2	.60	.....	.....	.....	.....	.....	.....	.....	1029
Same (composite of Nos. 8552-8554).....	8682	.....	3	2.8	14.0	81.7	4.28	.57	4.61	83.28	1.00	6.34	2.9	8.080	14.640	1029
.....	.....	.....	3	.....	.....	.....	.....	.....	4.38	80.24	1.13	2.40	.....	8.365	15.060	1029
.....	.....	.....	3	.....	.....	.....	.....	.....	4.68	90.09	1.13	2.55	.....	8.740	15.730	1029
.....	.....	.....	3	.....	.....	.....	.....	.....	4.66	84.84	1.10	2.60	2.2	8.490	14.740	1029
.....	.....	.....	3	.....	.....	.....	.....	.....	4.48	87.30	1.10	2.60	.....	8.430	15.170	1029
.....	.....	.....	3	.....	.....	.....	.....	.....	4.60	90.76	1.21	2.70	.....	8.765	15.770	1029

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.				Ultimate.				Calorific value.		Reference.			
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.		Air- dry- ing loss.	Calo- ries.	British thermal units.
WEST VIRGINIA—Continued.																
MERCER COUNTY—continued.																
Simmons—Continued.																
2 miles west of Caswell-Elkhorn mine, Pocahontas No. 3 bed (left entry 6, 3,800 feet northwest of drift mouth, 7½-foot cut).	8555	A	1	3.7	14.5	79.2	2.6	0.50					3.1			1030
			2		15.0	82.3	2.7	.50								
			3		15.5	84.5		.55								
Same (room 1 off right entry 4, 2,400 feet north- west of drift mouth, 6½-foot cut).	8556	A	1	3.4	14.5	78.7	3.4	.75					2.7			1030
			2		15.0	81.5	3.5	.75								
			3		15.5	84.5		.80								
Same (right entry 1, 1,400 feet north of drift mouth, 8¼-inch cut).	8557	A	1	4.1	14.0	77.7	4.2	.70					3.4	8,037	14,470	1030
			2		14.5	81.1	4.4	.75						8,380	15,080	
			3		15.0	85.0		.80							8,760	15,770
Same (border-line entry off right entry 3, 2,800 feet north of drift mouth, 7¼-foot cut).	8558	A	1	3.3	14.0	78.6	4.1	.70					2.6			1030
			2		14.5	81.3	4.2	.75								
			3		15.0	85.0		.75								
Same (pillar 12 on left entry 3, 2,400 feet west of drift mouth, 78½-inch cut).	8559	A	1	4.5	14.5	77.6	3.4	.65					3.7	8,055	14,500	1030
			2		15.0	81.5	3.5	.65						8,430	15,170	
			3		15.5	84.5		.70							8,735	15,730
Same (composite of Nos. 8555-8558)	8677	.....	1	3.6	14.5	78.3	3.58	.70	4.60	84.95	1.16	5.01	3.0	8,150	14,670	1030
			2		15.0	81.3	3.72	.73	4.30	88.16	1.20	1.83		8,455	15,220	
			3		15.5	84.5		.76	4.53	91.56	1.25	1.90		8,780	15,810	
2 miles west of Caswell-Hornlock mine, Pocahontas No. 3 bed (Charleston entry, 4,800 feet south of drift mouth, 80-inch cut).	8560	A	1	3.9	14.5	78.3	3.3	.90					3.2	8,170	14,710	1030
			2		15.0	81.6	3.4	.95						8,500	15,300	
			3		15.5	84.5		1.00							8,800	15,840
Same (pillar, room 4 on straight entry, 5,600 feet south of drift mouth, 7½-foot cut).	8561	A	1	3.6	14.5	77.8	4.1	.83					3.1			1030
			2		15.0	80.8	4.2	.90								
			3		15.5	84.5		.95								
Same (pillar, room 18 on Deacon's entry, 7,000 feet southeast of drift mouth, 82-inch cut).	8562	A	1	4.7	14.5	77.5	3.3	.60					3.9			1030
			2		15.0	81.5	3.5	.65								
			3		16.0	84.0		.65								
Same (pillar, room 8, cross entry 3, 6,700 feet south of drift mouth, 8½-foot cut).	8563	A	1	5.0	14.0	75.9	5.1	.65					4.3			1030
			2		14.5	80.1	5.4	.65								
			3		15.5	84.5		.70								
Same (composite of Nos. 8561-8563)	8676	.....	1	4.4	15.0	76.5	4.10	.73	4.82	81.14	1.11	8.10	3.8	8,040	14,470	1030
			2		15.5	76.5	4.29	.76	4.53	84.91	1.16	4.35		8,415	15,150	
			3		16.5	80.2	4.35	.79	4.73	88.71	1.21	4.56		8,790	15,820	

Springtown, $\frac{1}{2}$ mile east of; Spring mine, Pocahontas No. 3 bed (left entry 2, 3,600 feet from drift mouth, 53 $\frac{1}{2}$ -inch cut).	A	1	3.54	12.23	80.64	3.59	59	59	2.7	1032
		2	12.68	83.60	3.72	61	61	61		
		3	13.17	86.83	53					
Same (Franklin entry, right entry 2 off left entry 2, 3,400 feet from drift mouth, 53 $\frac{1}{2}$ -inch cut).	A	1	3.26	11.72	80.08	4.94	59	59	2.1	1032
		2	12.11	82.78	5.11	61	61	61		
		3	12.76	87.24						
Same (main heading, 3,600 feet from drift mouth, 56 $\frac{1}{2}$ -inch cut).	A	1	3.1	12.28	79.60	5.02	63	63	2.1	1032
		2	12.67	82.15	5.18	65	65	65		
		3	13.36	86.64						
Same (Tazewell entry, 3,600 feet from drift mouth, 52 $\frac{1}{2}$ -inch cut).	A	1	3.48	11.65	80.02	4.85	54	54	2.5	1032
		2	12.07	82.90	5.03	56	56	56		
		3	12.71	87.29						
Same (left heading 1; 3,600 feet from drift mouth, 53 $\frac{1}{2}$ -inch cut).	A	1	3.45	11.57	80.19	4.79	54	54	2.5	1032
		2	11.98	83.06	4.96	56	56	56		
		3	12.61	87.39						
Same (composite of Nos. 8434-8438).	.....	1	3.24	12.61	87.39	4.70	59	59	2.4	1032
		2	12.72	82.42	4.86	61	61	61	4.11	8,072 14,532
		3	13.37	86.63					1.27	8,342 15,016
Wenonah (Doti post office). Wenonah mine, Pocahontas No. 3 bed (left entry 2, off main entry 2, 2,000 feet from drift mouth, 43 $\frac{1}{2}$ -inch cut).	A	1	2.97	13.20	82.96	3.73	59	59	1.34	8,768 15,782
		2	13.73	86.27					2.4	
		3	13.05	82.79	4.16	55	55	55		
Same (left entry 2, off main entry 1, 39 $\frac{1}{2}$ -inch cut).	A	1	3.78	12.56	79.66	4.00	53	53	3.2	1033
		2	13.62	86.38						
		3	13.16	78.88	4.40	57	57	57	3.0	1033
Same (left heading 4, off main entry 1, 44 $\frac{1}{2}$ -inch cut).	A	1	3.56	13.65	81.79	4.56	61	61		1033
		2	14.30	85.70					2.9	
		3	13.35	78.89	4.81	58	58	58		
Same (main entry 1, 40 $\frac{1}{2}$ -inch cut).	A	1	3.45	13.83	81.19	4.98	61	61		1033
		2	14.55	85.45					2.9	
		3	13.17	79.10	4.15	58	58	58	2.9	1033
Same (composite of Nos. 8323-8336).	.....	1	3.58	13.65	82.64	4.30	58	58	1.07	8,110 14,568
		2	14.27	82.73					5.73	8,411 15,140
		3	13.61	78.50	4.41	63	63	63	2.65	8,789 15,829
Widemouth, one-half mile west of; Piedmont mine, Pocahontas No. 4 (?) bed (room 2, off right heading 30, 2,000 feet southwest of drift mouth, 48 $\frac{1}{2}$ -inch cut).	A	1	3.21	14.70	73.50	6.41	48	48	2.77	8,886 14,105
		2	15.28	78.10	6.62	50	50	50	2.8	8,147 14,665
		3	16.36	83.64					8,725 15,705	
Same (left entry 3, off main entry 1, 3,600 feet southwest of drift mouth, 50 $\frac{1}{2}$ -inch cut).	A	1	3.58	15.23	75.28	5.91	50	50	3.1	1034
		2	15.80	78.07	6.13	52	52	52	3.1	7,914 14,245
		3	16.85	83.17					8,208 14,744	
Same (left entry 2, off main entry 3, 900 feet north of drift mouth, 54 $\frac{1}{2}$ -inch cut).	A	1	3.24	16.57	75.06	4.53	55	55	2.8	1034
		2	17.37	78.19	4.68	57	57	57	2.8	8,780 15,759
		3	17.97	82.03					8,351 15,631	
Same (main heading 2, 1,100 feet northeast of drift mouth, 49 $\frac{1}{2}$ -inch cut).	A	1	3.32	15.38	75.98	5.32	46	46		1034
		2	15.91	78.59	5.50	48	48	48	2.8	8,701 15,769
		3	16.84	83.16					8,011 14,421	
Same (composite of Nos. 10423-10426).	A	1	3.37	15.65	75.49	5.49	54	54		1034
		2	16.20	78.12	5.68	56	56	56	5.17	8,768 15,784
		3	17.18	82.82					2.9	7,984 14,371
									2.25	8,263 14,873
									2.39	8,760 15,708

10453	A	1	1.00	15.19	76.11	7.79	.83	4.30	82.85	1.39	2.84	1037
Same (composite of Nos. 492 and 494).	A	2	1.99	15.25	76.88	7.87	.84	4.23	83.69	1.40	1.97	1037
		3	1.99	17.72	81.45	8.38	.91	4.59	90.84	1.52	2.14	1037
		4	1.99	17.72	81.45	8.38	.91	4.59	90.84	1.52	2.14	1037
Wabash, Wabash No. 9 mine, Georges Creek or Pitts- burgh bed (pillar, opening 12, room 2, 13½- inch cut).	A	1	1.99	17.72	81.45	8.38	.91	4.59	90.84	1.52	2.14	1037
		2	1.99	17.72	81.45	8.38	.91	4.59	90.84	1.52	2.14	1037
		3	1.99	17.72	81.45	8.38	.91	4.59	90.84	1.52	2.14	1037
Same (opening 9 to right of main air course, 120½-inch cut).	A	1	1.73	17.24	73.50	7.53	1.09	4.08	78.50	1.43	2.44	1037
		2	1.73	17.24	73.50	7.53	1.09	4.08	78.50	1.43	2.44	1037
		3	1.73	17.24	73.50	7.53	1.09	4.08	78.50	1.43	2.44	1037
Same (composite of 493 and 495).	A	1	1.06	17.20	73.84	7.90	1.12	4.55	81.67	1.41	3.35	1037
		2	1.06	17.20	73.84	7.90	1.12	4.55	81.67	1.41	3.35	1037
		3	1.06	17.20	73.84	7.90	1.12	4.55	81.67	1.41	3.35	1037
MINGO COUNTY.	A	1	2.81	31.67	59.02	6.50	.66	4.30	82.85	1.39	2.84	1038
		2	2.81	31.67	59.02	6.50	.66	4.30	82.85	1.39	2.84	1038
		3	2.81	31.67	59.02	6.50	.66	4.30	82.85	1.39	2.84	1038
Glen Alum, Glen Alum mine, War Eagle bed (crescent 900 feet from drift mouth, 63½-inch cut).	A	1	4.04	31.25	59.55	5.16	.64	4.30	82.85	1.39	2.84	1038
		2	4.04	31.25	59.55	5.16	.64	4.30	82.85	1.39	2.84	1038
		3	4.04	31.25	59.55	5.16	.64	4.30	82.85	1.39	2.84	1038
Same (3,000 feet from drift mouth, room 19, off entry 20, 74½-inch cut).	A	1	2.86	31.23	58.08	5.83	.67	4.30	82.85	1.39	2.84	1038
		2	2.86	31.23	58.08	5.83	.67	4.30	82.85	1.39	2.84	1038
		3	2.86	31.23	58.08	5.83	.67	4.30	82.85	1.39	2.84	1038
Same (run of mine).	C	1	36.39	63.61	7.79	.73	.73	4.30	82.85	1.39	2.84	1038
		2	36.39	63.61	7.79	.73	.73	4.30	82.85	1.39	2.84	1038
		3	36.39	63.61	7.79	.73	.73	4.30	82.85	1.39	2.84	1038
MONONGALIA COUNTY.	A	1	2.21	29.44	60.03	8.32	.80	4.30	82.85	1.39	2.84	1039
		2	2.21	29.44	60.03	8.32	.80	4.30	82.85	1.39	2.84	1039
		3	2.21	29.44	60.03	8.32	.80	4.30	82.85	1.39	2.84	1039
Morgantown, 4 miles southeast of; Richard mine, Upper Freeport bed (right entry 4, off main, 3½-foot cut).	A	1	2.90	28.64	60.27	8.19	.77	4.30	82.85	1.39	2.84	1039
		2	2.90	28.64	60.27	8.19	.77	4.30	82.85	1.39	2.84	1039
		3	2.90	28.64	60.27	8.19	.77	4.30	82.85	1.39	2.84	1039
Same (airway near left entry 4, 503½-inch cut).	A	1	2.29	29.86	57.62	10.23	1.06	4.90	75.13	1.42	7.17	1039
		2	2.29	29.86	57.62	10.23	1.06	4.90	75.13	1.42	7.17	1039
		3	2.29	29.86	57.62	10.23	1.06	4.90	75.13	1.42	7.17	1039
Same (run of mine).	C	1	40.56	58.97	10.47	1.08	1.21	4.85	76.89	1.45	5.20	1040
		2	40.56	58.97	10.47	1.08	1.21	4.85	76.89	1.45	5.20	1040
		3	40.56	58.97	10.47	1.08	1.21	4.85	76.89	1.45	5.20	1040
NICHOLAS COUNTY.	A	1	34.13	65.87	1.21	1.21	1.21	4.85	76.89	1.45	5.20	1040
		2	34.13	65.87	1.21	1.21	1.21	4.85	76.89	1.45	5.20	1040
		3	34.13	65.87	1.21	1.21	1.21	4.85	76.89	1.45	5.20	1040
Delphi, 3 miles northwest of; near head of Righthand Fork of Muddy Creek, country bank of Packer, Harrison & O'Connor, Watts- ville (137-inch) bed (middle and bottom benches, 5-foot cut).	B	1	2.28	31.20	49.02	17.50	.68	4.30	82.85	1.39	2.84	1040
		2	2.28	31.20	49.02	17.50	.68	4.30	82.85	1.39	2.84	1040
		3	2.28	31.20	49.02	17.50	.68	4.30	82.85	1.39	2.84	1040
Same (upper bench, 67-inch cut).	B	1	2.27	33.67	55.64	8.42	1.05	4.30	82.85	1.39	2.84	1040
		2	2.27	33.67	55.64	8.42	1.05	4.30	82.85	1.39	2.84	1040
		3	2.27	33.67	55.64	8.42	1.05	4.30	82.85	1.39	2.84	1040
Gilboa, 3 miles northwest of; at head of Rader Fork of Twenty-mile Creek, country bank, Watts- ville (57½-inch) bed, lower bench, 47-inch cut.	B	1	2.83	33.53	53.32	10.32	.64	4.30	82.85	1.39	2.84	1040
		2	2.83	33.53	53.32	10.32	.64	4.30	82.85	1.39	2.84	1040
		3	2.83	33.53	53.32	10.32	.64	4.30	82.85	1.39	2.84	1040
Hookersville, east of; Hutchinson country bank near Wood's field, Wattsville, 99½-inch bed.	B	1	2.29	31.93	51.31	14.47	1.20	4.30	82.85	1.39	2.84	1041
		2	2.29	31.93	51.31	14.47	1.20	4.30	82.85	1.39	2.84	1041
		3	2.29	31.93	51.31	14.47	1.20	4.30	82.85	1.39	2.84	1041

a Big Vein (Georges Creek or Pittsburgh) bed.

Table of chemical analyses—Continued.

Sample.		Proximate.					Ultimate.				Calorific value.		Reference.					
		Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.		Oxy- gen.	Air- dry- loss.	Calo- ries.	British thermal units.	Page of this bulle- tin.
WEST VIRGINIA—Continued.																		
NICHOLAS COUNTY—continued.																		
Summersville, near; McRader country bank, No. 2 Gas bed, 35-inch section, lower bench, 23-inch cut.		1581	B	1	2.40	33.02	59.49	5.09	0.52					1.4			48	1041
				2		33.83	60.95	5.22	.53									
				3		35.69	64.31		.50									
Three-fourths mile from; country bank on J. E. Sims farm, No. 2 Gas (50-inch) bed, lower bench, 35½-inch cut.		1579	B	1	6.90	28.64	56.59	7.87	.71					5.0			48	1042
				2		30.76	60.79	8.45	.76									
				3		33.60	66.40		.83									
West of; on Fitzwater Branch of Peters Creek, country bank on C. H. Dunbar farm, No. 2 Gas (40½-inch) bed, lower bench, 26-inch cut.		1582	B	1	3.51	31.62	60.25	4.62	.72					2.3			48	1042
				2		32.77	62.44	4.79	.75									
				3		34.42	65.58		.79									
1 mile south of; country bank on Backus farm, 51½-inch bed, stock-pile sample, No. 2 Gas bed.		1578	B	1	2.31	30.93	57.52	9.24	1.27					.8			48	1042
				2		31.66	58.88	9.46	1.30									
				3		34.97	65.03		1.44									
1 mile west of; head of McKee Creek, stripping on Neff farm, 60½-inch bed, 58-inch cut, No. 2 Gas bed.		1583	B	1	5.44	28.15	60.15	6.26	.67					3.4			48	1043
				2		29.77	63.61	6.62	.71									
				3		31.88	68.12		.76									
PRESTON COUNTY.																		
Bretz, Bretz mine, Upper Freeport bed (right room 1, off main entry, 96½-inch section, 37½-inch cut).		1116	A	1	2.26	28.71	61.29	7.74	.85			1.30		1.1	7,777	13,999	290	1043
				2		29.37	62.71	7.92	.87			1.33			7,937	14,323	48	
				3		31.89	68.11		.94			1.44			8,641	15,554	13	1043
Same (left room 1, off main entry, 98½-inch section, 36-inch cut).		1117	A	1	2.26	28.53	60.63	8.58	1.26					1.2			336	
				2		29.19	62.03	8.78	1.29									48
				3		32.00	68.00		1.41									23
Same (run of mine, 25 tons).....		1262	C	1	1.48	28.58	61.55	8.39	.90	4.89	77.82	1.48	6.52	.5	7,816	14,069	261	
				2		29.01	62.47	8.52	.91	4.80	78.99	1.50	5.28		7,933	14,279	48	
				3		31.71	68.29		.99	5.25	86.34	1.64	5.78		8,672	15,610		
Same (1,300 feet from drift mouth, left heading 2, off main entry, 51½-inch bed, 49½-inch cut).		2054	A	1	3.57	27.38	62.84	6.21	.85					2.4	7,889	14,218	290	1043
				2		28.39	65.17	6.44	.88						8,191	14,744		
				3		30.34	69.66		.94						8,755	15,759		
Same (800 feet southwest of drift mouth, right entry 3, off main entry, 41-inch bed, 38-inch cut).		2055	A	1	3.47	28.65	62.70	5.18	.80					2.3			290	1043
				2		29.68	64.95	5.37	.83									
				3		31.36	68.64		.88									

One mile from; Blue Jay mine, Beekley bed (right entry 1, 500 feet from drift mouth, 52½-inch cut). Same (main entry, 600 feet from drift mouth, 57½-inch cut).	8308	A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215	1216	1217	1218	1219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Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.		Reference.		
	Laboratory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.		Calo- rific units.	British thermal units.
WEST VIRGINIA—Continued.																
RALEIGH COUNTY—continued.																
Stanford, Piney No. 1 mine—Continued.																
Same (run of mine, first car).....	5719	C	1	2.14	16.83	71.91	9.12	1.20	4.74	79.60	1.41	3.93	1.4	7,791	14,024	362
			2	.....	17.20	73.48	9.32	1.23	4.57	81.34	1.44	2.10	.....	7,961	14,330	.....
			3	.....	18.97	81.03	.....	1.36	5.04	89.70	1.59	2.31	.....	8,779	15,802	.....
Same (run of mine, second car).....	5720	C	1	2.56	16.08	72.87	8.49	.85	4.75	79.85	1.34	4.72	1.9	7,802	14,043	362
			2	.....	16.50	74.79	8.71	.87	4.55	81.94	1.38	2.55	.....	8,007	14,413	.....
			3	.....	18.07	81.93	.....	.95	4.98	89.76	1.51	2.80	.....	8,771	15,788	.....
Stanford No. 1 mine, Beckley bed (main entry, 3,990 feet from drift mouth, 83-inch cut).....	8267	A	1	3.7	16.0	74.7	5.6	1.35	.....	.....	.....	.....	2.9	.....	.....	1062
			2	.....	16.5	77.7	5.8	1.40	.....	.....	.....	.....	.....	.....	.....	.....
			3	.....	17.5	82.5	.....	1.50	.....	.....	.....	.....	.....	.....	.....	.....
Same (left entry 2, 40-inch cut).....	8268	A	1	3.0	17.5	72.1	7.4	.85	.....	.....	.....	.....	2.2	.....	.....	1062
			2	.....	18.0	74.4	7.6	.90	.....	.....	.....	.....	.....	.....	.....	.....
			3	.....	19.5	80.5	.....	1.00	.....	.....	.....	.....	.....	.....	.....	.....
Same (main entry, S. 74° W., 3,900 feet from drift mouth, 83-inch cut).....	8269	A	1	3.6	16.5	74.9	5.0	.95	.....	.....	.....	.....	2.8	.....	.....	1062
			2	.....	17.0	77.8	5.2	.95	.....	.....	.....	.....	.....	.....	.....	.....
			3	.....	18.0	82.0	.....	1.00	.....	.....	.....	.....	.....	.....	.....	.....
Same (composite of Nos. 8267-8269).....	8311	.....	1	3.3	16.0	74.7	5.96	1.08	4.91	81.04	1.45	5.56	2.6	7,950	14,310	1062
			2	.....	16.5	77.3	6.16	1.12	4.69	83.80	1.50	2.73	.....	8,220	14,800	.....
			3	.....	17.5	82.5	.....	1.19	5.00	89.30	1.60*	2.91	.....	8,760	15,770	.....
Stanford No. 2 mine, Beckley bed (main entry, 1,000 feet southwest of drift mouth, 31-foot cut).....	8270	A	1	3.5	17.0	75.3	4.16	.66	5.04	82.62	1.47	6.05	2.7	8,090	14,560	1062
			2	.....	18.5	78.2	4.31	.68	4.82	85.60	1.52	3.07	.....	8,382	15,090	.....
			3	.....	18.5	81.5	.....	.71	5.04	89.45	1.59	3.21	.....	8,759	15,770	.....
Same (main entry, 2,900 feet S. 74° 30' W. of drift mouth, 50½-inch cut).....	8271	A	1	2.8	18.0	73.6	5.6	1.10	.....	.....	.....	.....	1.9	7,990	14,380	1062
			2	.....	18.5	75.8	5.7	1.10	.....	.....	.....	.....	.....	8,215	14,790	.....
			3	.....	19.5	80.5	.....	1.20	.....	.....	.....	.....	.....	8,715	15,680	.....
1½ miles from; Stanford (Piney) No. 3 mine, Sewell bed (left entry 6, 2,070 feet N. 23° W. of drift mouth, 51½-inch cut).....	8275	A	1	3.87	15.67	75.28	5.18	.67	.....	.....	.....	.....	2.5	.....	.....	1063
			2	.....	16.30	78.31	5.39	.70	.....	.....	.....	.....	.....	.....	.....	.....
			3	.....	17.23	82.77	.....	.74	.....	.....	.....	.....	.....	.....	.....	.....
Same (right entry 7, 2,160 feet N. 23° W. of drift mouth, 50½-inch cut).....	8276	A	1	3.08	15.11	78.44	3.37	.61	.....	.....	.....	.....	2.2	.....	.....	1063
			2	.....	15.59	80.93	3.48	.63	.....	.....	.....	.....	.....	.....	.....	.....
			3	.....	16.15	83.85	.....	.65	.....	.....	.....	.....	.....	.....	.....	.....
Same (main entry, 3,200 feet N. 23° W. of drift mouth, 41½-inch cut).....	8277	A	1	3.68	15.10	78.93	2.20	.53	5.15	84.60	1.54	5.89	2.9	8,232	14,818	1063
			2	.....	15.68	81.94	2.38	.55	4.92	87.83	1.60	2.72	.....	8,546	15,383	.....
			3	.....	16.08	83.94	.....	.56	5.04	89.97	1.64	2.79	.....	8,755	15,759	.....

Same (composite of Nos. 8275-8277).....		8313	1	2	3	14.42	78.68	3.70	.61	5.02	83.68	1.42	5.57	2.5	8,129	14,632	1063
Stanford (Piney) No. 4 mine, Beckley bed (main entry, 1,600 feet S. 74° W. of drift mouth, 49½-inch cut).	A	8278	1	2	3	14.90	81.28	3.82	.03	4.81	86.45	1.47	2.82	.....	8,398	15,116	1063
			1	2	3	15.49	74.51	4.88	.06	5.00	89.88	1.53	2.93	.....	7,731	15,716	1063
			1	2	3	4.71	84.58	5.12	.88	5.10	80.57	1.45	7.20	3.9	7,865	14,157	1063
Stonewall, Stonewall No. 2 mine, Fire Creek bed (left entry 1, 500 feet north of drift mouth, 34-inch cut).	A	8345	1	2	3	16.52	83.48	5.12	.89	4.81	84.55	1.52	3.16	.....	8,254	14,857	1064
			1	2	3	16.52	83.48	2.17	.84	5.07	89.12	1.60	3.32	.....	8,700	15,660	1064
			1	2	3	3.02	16.06	81.20	2.24	8.50	85.02	1.40	5.59	2.2	8,334	15,001	1064
1½ miles west of; Stonewall No. 3 mine, Fire Creek bed (room 3, entry 34, 2,700 feet west of drift mouth, 56½-inch cut).	A	8343	1	2	3	16.56	81.20	2.24	.82	4.83	87.66	1.44	3.01	.....	8,593	15,467	1064
			1	2	3	16.94	83.06	2.50	.84	4.94	89.67	1.47	3.08	.....	8,790	15,822	1064
			1	2	3	2.76	18.77	75.97	.88	.....	.....	.....	.....	2.0	.....	.....	1064
Same (room 9, entry 32, 2,300 feet southwest of drift mouth, 56½-inch cut).	A	8344	1	2	3	19.31	80.19	2.68	.64	.....	.....	.....	.....	2.7	.....	.....	1064
			1	2	3	3.50	18.31	75.51	.68	.....	.....	.....	.....	.....	.....	.....	1064
			1	2	3	18.97	78.25	2.78	.66	.....	.....	.....	.....	.....	.....	.....	1064
Same (entry 24, 1,700 feet west of drift mouth, 60½-inch cut).	A	8342	1	2	3	13.13	16.74	77.69	.61	.....	.....	.....	.....	2.3	.....	.....	1064
			1	2	3	17.73	82.27	2.52	.63	.....	.....	.....	.....	.....	.....	.....	1064
			1	2	3	3.04	17.24	77.19	.72	5.01	84.77	1.51	5.46	2.3	8,252	14,854	1064
Same (composite of Nos. 8342-8344).....	A	8426	1	2	3	17.78	79.61	2.61	.74	4.82	87.43	1.56	2.84	.....	8,511	15,320	1064
			1	2	3	18.26	81.74	2.66	.69	4.95	89.77	1.60	2.92	.....	8,739	15,730	1064
			1	2	3	3.05	17.77	77.12	.76	5.04	83.61	1.57	6.43	2.2	8,267	14,881	1064
Sullivan, Sullivan mine, Beckley bed (main south entry, south mine, 320 feet from drift mouth, 49½-inch cut).	A	8282	1	2	3	17.71	79.55	2.74	.73	4.85	86.24	1.62	3.84	.....	8,527	15,349	1065
			1	2	3	18.21	81.79	2.78	.73	4.99	88.67	1.67	3.94	.....	8,767	15,781	1065
			1	2	3	3.38	13.65	77.19	1.08	.....	.....	.....	.....	2.6	.....	.....	1065
Same (main north mine entry 2, 200 feet from drift mouth, 58½-inch cut).	A	8283	1	2	3	14.13	79.89	5.98	1.12	.....	.....	.....	.....	2.8	.....	.....	1065
			1	2	3	15.03	84.97	4.61	.82	.....	.....	.....	.....	.....	.....	.....	1065
			1	2	3	3.66	14.36	77.37	1.01	.....	.....	.....	.....	.....	.....	.....	1065
Same (composite of Nos. 8282 and 8283).....	A	8409	1	2	3	15.66	84.34	4.79	.89	4.91	82.33	1.39	5.10	2.7	7,939	14,290	1065
			1	2	3	3.55	14.02	77.15	5.28	4.69	85.36	1.44	2.01	.....	8,231	14,816	1065
			1	2	3	14.54	79.99	5.47	1.03	4.91	90.30	1.52	2.13	.....	8,708	15,674	1065
Terry, Terry mine, Fire Creek bed (room 11 on right entry 2, 2,200 feet north of drift mouth, 59½-inch cut).	A	8353	1	2	3	15.38	84.62	5.28	.93	4.96	90.30	1.52	2.13	1.8	.....	.....	1066
			1	2	3	16.32	75.26	5.77	.90	.....	.....	.....	.....	.....	.....	.....	1066
			1	2	3	2.65	16.76	77.31	5.93	.....	.....	.....	.....	.....	.....	.....	1066
Same (main entry 2, 2,200 feet west of drift mouth, 21½-inch cut).	A	8354	1	2	3	17.82	82.18	7.11	.98	.....	.....	.....	.....	2.1	.....	.....	1066
			1	2	3	3.03	16.01	73.85	.49	.....	.....	.....	.....	.....	.....	.....	1066
			1	2	3	16.51	76.16	7.33	.51	.....	.....	.....	.....	.....	.....	.....	1066
Same (left entry 1 in room 3, 1,000 feet south of drift mouth, 37-inch cut).	A	8355	1	2	3	17.82	82.18	2.78	.55	.....	.....	.....	.....	1.6	.....	.....	1066
			1	2	3	2.53	15.93	78.76	.60	.....	.....	.....	.....	.....	.....	.....	1066
			1	2	3	16.34	80.81	2.85	.62	.....	.....	.....	.....	.....	.....	.....	1066
Same (composite of Nos. 8353-8355).....	A	8423	1	2	3	16.82	83.18	5.25	.64	4.84	82.56	1.43	5.28	1.8	8,060	14,508	1066
			1	2	3	15.99	76.01	5.25	.64	4.84	82.56	1.43	5.28	.....	8,288	14,918	1066
			1	2	3	16.44	78.16	5.40	.66	4.66	84.90	1.47	2.91	.....	8,761	15,770	1066
West Raleigh, Raleigh No. 2 mine, Beckley bed (1,800 feet northeast of drift mouth, pillar between right entries 5 and 5½, 55½-inch section, 52½-inch cut).	A	5547	1	2	3	17.38	82.62	3.08	.96	7.0	89.75	1.55	3.07	1.8	8,300	14,940	1066
			1	2	3	15.84	78.80	3.15	.98	.....	.....	.....	.....	.....	8,494	15,289	1066
			1	2	3	16.21	80.64	3.15	.98	.....	.....	.....	.....	.....	8,770	15,786	1066
Raleigh No. 1 mine (3,150 feet northwest of drift mouth, right entry 7, 55½-inch section, 56½-inch cut), Beckley bed.	A	5548	1	2	3	16.74	83.26	3.08	.65	.....	.....	.....	.....	1.8	8,316	14,969	1066
			1	2	3	2.32	16.18	78.42	.67	.....	.....	.....	.....	.....	8,514	15,325	1066
			1	2	3	17.10	82.90	3.15	.69	.....	.....	.....	.....	.....	8,791	15,824	1066

Same (butt entry 8, 50½-inch cut)	397	A	1	2	15	21.94	66.40	9.51	1.26	7.097	13.854	1068
Same (composite of Nos. 393-397)	10450	A	2	2	2	22.42	67.86	9.72	1.27	7.866	14.158	1068
Thomas No. 34 mine, Lower Kittanning or Davis bed (Birge heading, 558-inch cut).	474	A	2	1	12	20.74	70.38	7.70	1.05	4.92	81.22	1069
Same (room 6, off Roberts heading, 67½-inch cut).	475	A	2	2	3	22.70	71.88	7.85	1.06	4.48	82.14	1069
Same (right entry 2, off Foreman heading, 60-inch cut).	476	A	2	3	3	22.76	72.24	7.85	1.13	4.83	80.14	1069
Same (composite of Nos. 474-476)	10456	A	2	3	3	22.76	72.24	7.85	1.13	4.83	80.14	1069
14 miles southwest of; Coketon No. 26 mine, Upper Froport bed (room 3, off east heading, 65½-inch cut).	477	A	2	3	3	22.76	72.24	7.85	1.13	4.83	80.14	1069
Same (left heading 3, 64½-inch cut)	478	A	2	3	3	22.76	72.24	7.85	1.13	4.83	80.14	1069
Same (right heading 3, 40-inch cut)	479	A	2	3	3	22.76	72.24	7.85	1.13	4.83	80.14	1069
Same (composite of Nos. 477-479)	10430	A	2	3	3	22.76	72.24	7.85	1.13	4.83	80.14	1069
Thomas, 14 miles southwest of, Coketon No. 36 or Old No. 2 mine, Lower Kittanning bed (straight bull-wheel heading, 1½ miles from drift mouth, upper bench, 43½-inch cut).	398	A	2	3	3	22.76	72.24	7.85	1.13	4.83	80.14	1070
Same (lower bench, 12½-inch cut)	399	A	2	3	3	22.76	72.24	7.85	1.13	4.83	80.14	1070
Same (Arthur heading, 2 miles from drift mouth, 71½-inch cut).	400	A	2	3	3	22.76	72.24	7.85	1.13	4.83	80.14	1070
Same (Ryan heading, 2 miles from drift mouth, 60-inch cut).	401	A	2	3	3	22.76	72.24	7.85	1.13	4.83	80.14	1070
Same (southeast heading, pillar in shaft working of No. 34, 900 feet from Arthur heading, 2 miles from drift mouth, 72½-inch cut).	402	A	2	3	3	22.76	72.24	7.85	1.13	4.83	80.14	1070
Same (composite of Nos. 398-402)	10432	A	2	3	3	22.76	72.24	7.85	1.13	4.83	80.14	1070

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.				Ultimate.				Calorific value.		Reference.				
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.		Air- dry- ing loss.	Calo- ries.	British thermal units.	Page of this bulle- tin.
WEST VIRGINIA—Continued.																	
TUCKER COUNTY—continued.																	
Thomas—Continued.																	
1½ miles southwest of; Coketon No. 37 mine, Lower Kittanning or Davis bed (left heading 1 off Pratt entry, 62½-inch cut).	481	A	1	2.21	24.27	65.51	8.01	1.07						7,785	14,013	1071	
Same (north heading 4, 46½-inch cut).	480	A	2		24.82	66.99	8.19	1.09						8,671	14,330	1071	
			3		27.03	72.97		1.19						7,572	14,170		
			1	3.44	25.59	64.90	6.07	1.04						8,153	14,475		
			2		26.50	67.21	6.29	1.08						8,700	15,660		
			3		28.78	71.72		1.15						7,735	13,923	1071	
Same (room 2 off Clark heading 70½-inch cut).	482	A	1	3.42	20.38	68.81	7.39	.67						8,009	14,416	1071	
			2		21.10	71.25	7.65	.69						8,672	15,610	1071	
			3		22.85	77.15		.75									
Same (composite of Nos. 480-482).	10449	A	1	1.18	22.48	68.36	7.98	.98	4.71	80.09	1.50	4.74					
			2		22.75	69.18	8.07	.99	4.63	81.04	1.52	3.75					
			3		24.75	75.25		1.08	5.04	88.16	1.65	4.07					
1½ miles southwest of; Thomas No. 24 mine, Upper Freeport bed (crosscut between right heading 1 and air course, 1,100 feet southwest of drift mouth, 65½-inch cut).	407	A	1	2.45	22.39	68.11	7.05	.69						7,838	14,109	1072	
Same (main heading, 850 feet southwest of drift mouth, 65½-inch cut).	409	A	2		22.95	69.82	7.23	.71						8,035	14,463	1072	
			3		24.74	75.26		.77						8,661	15,590	1072	
			1	2.86	23.50	65.43	8.21	.60						7,732	13,918	1072	
			2		24.19	67.36	8.45	.61						7,960	14,328		
			3		26.42	73.58		.67						8,694	15,650		
Same (room 7 off left entry 1,800 feet southeast of drift mouth, 42½-inch cut).	408	A	1	2.66	24.24	67.56	5.54	.58						7,982	14,367	1072	
			2		24.90	69.41	5.69	.60						8,200	14,760		
			3		26.40	73.60		.64						8,695	15,651		
Same (composite of Nos. 407-409).	10433	A	1	1.13	23.09	68.43	7.35	.53	4.97	81.68	1.52	3.16				1072	
			2		23.35	69.22	7.43	.54	4.90	82.61	1.54	2.18					
			3		25.23	74.77		1.45	5.29	89.24	1.66	2.36					
			1	1.83	23.75	66.81	7.61	.52						7,862	14,151	1073	
			2		24.19	68.06	7.75	.53						8,005	14,415		
Thomas No. 25 mine, Upper Freeport bed (Stuart heading, 44½-inch cut).	403	A	1	1.67	21.99	66.96	9.38	.57						8,681	15,626	1073	
			2		22.36	68.10	9.54	.70						7,728	13,911		
Same (room 13 off Weaver heading, 66½-inch cut).	404	A	3		24.72	75.28		.80						7,859	14,147	1073	
			1	2.31	21.64	68.82	7.41	.79						8,683	15,630		
Same (room 1 off Roundhouse heading, 70½-inch cut).	405	A	2		22.11	70.32	7.57	.81						7,882	14,187	1073	
			1											8,053	14,496		

Same (room 5 off left entry 7, 61-inch cut).....	406	A	3	1	2	21	23	22	65	68	02	8	16	1	89
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Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.				Ultimate.				Calorific value.		Reference.					
	Lab- ora- tory No	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.		Air- dry- ing loss.	Calo- ries.	British thermal units.	Bul- letin No.	Page of this bulletin.
WYOMING—Continued.																		
BIG HORN COUNTY—continued.																		
Manderson, 14 miles north of; 7 miles southeast of Basin, sec. 19, T. 50 N., R. 92 W., Rogers and Gapin mine, 69-inch cut.	5778	B	1 2 3	14.94	33.43 39.30 44.56	37.90 44.56 53.13	13.73 16.14 7.59	1.76 2.07 2.47	5.68 4.73 5.64	53.27 62.63 74.69	1.02 1.20 1.43	21.54 13.23 15.77	4.6	5,281 6,299 7,404	9,506 11,176 13,327	341	1077	
Medeote, 3 miles northwest of; sec. 28, T. 49 N., R. 100 W., Black Diamond mine, 34-foot cut.	5768	B	1 2 3	17.67	27.28 33.13 37.46	47.46 57.65 63.50	9.22 9.22.....	.17 2.0 2.2	5.35 4.11 5.67	57.08 69.33 76.38	.81 1.02 1.12	18.97 16.12 17.75	6.3	5,382 6,537 7,202	9,688 11,767 12,964	341	1078	
2½ miles southwest of; SE ¼ sec. 13, T. 48 N., R. 101 W., Gray Bull mine, 5-foot cut.	5769	B	1 2 3	15.04	32.49 38.25 41.64	41.64 49.00 50.15	10.83 12.75	1.07 1.26 1.44	5.67 4.70 5.39	76.38 65.24 74.77	1.12 1.20 1.48	17.75 25.90 16.92	4.4	5,514 6,400 7,438	9,925 11,682 13,388	341	1078	
10 miles northwest of; on Horse Creek, NE ¼ sec. 7, T. 49 N., R. 101 W., Orr mine, 12½ feet from opening, 48-inch cut.	5764	B	1 2 3	16.12	35.12 41.87 48.62	40.78 53.73 58.73	7.98 9.51.....	.53 .63 .70	5.91 4.91 5.43	54.12 64.52 71.30	.92 1.10 1.22	30.54 19.33 21.35	5.5	6,174 6,823 7,188	11,113 12,281 12,902	341	1079	
19 miles southeast of; 8 miles west of Ho, sec. 26, T. 46 N., R. 99 W., Mayfield mine, on Grass Creek, 32-foot section, slightly weathered sample.	5770	B	1 2 3	12.84	33.96 38.96 41.36	48.15 55.25 58.64	5.05 5.79.....	.39 .45 .48	5.92 5.16 5.48	63.68 73.06 77.55	.80 .91 1.07	21.16 14.63 15.52	2.9	6,248 7,069 7,609	11,246 12,902 13,696	341	1079	
Tensleep, 12 miles southwest of; sec. 33, T. 46 N., R. 89 W., Bad Kimball Draw, 150 feet from opening, side of main entry, 70-inch bed, 5½-foot cut.	6709	B	1 2 3	16.30	35.81 42.78 52.32	32.62 38.98 47.68	15.27 18.24.....	.96 1.15 1.41	5.63 4.56 5.58	50.84 60.74 74.29	.71 .85 1.01	26.59 14.46 17.68	8.2	4,921 5,879 7,191	8,858 10,582 12,944	381	1079	
Wiley, 4 miles southwest of; sec. 34, T. 51 N., R. 101 W., West Wiley mine, 140 feet from opening, 46-inch cut.	5767	B	1 2 3	15.04	31.87 37.51 43.19	38.39 43.19 49.43	14.70 17.30.....	.76 .89 1.08	5.49 4.50 5.44	52.42 61.70 74.61	.97 1.14 1.38	25.66 14.47 17.49	4.6	5,150 6,062 7,330	9,270 10,912 13,194	341	1080	
6 miles east of; sec. 10, T. 51 N., R. 100 W., East Wiley mine, 42-inch cut.	5762	B	1 2 3	13.43	35.16 40.61 49.51	42.86 49.31 54.94	8.55 9.88.....	.44 .51 .57	4.92 5.12 5.68	58.42 67.48 74.87	1.05 1.21 1.34	23.62 15.80 17.54	5.0	6,038 6,513 7,227	10,138 11,723 13,069	341	1080	
CARBON COUNTY.																		
Arlington, 4 miles southwest of; 14 miles southwest of Rock River; SW ¼ N.W. ¼ sec. 2, T. 18 N., R. 78 W., Cottontail mine, 150 feet in, 5-foot cut.	6641	B	1 2 3	20.96	28.73 36.35 45.34	34.64 43.82 54.66	15.67 19.83.....	.86 1.09 1.36	..... ..... .....	..... ..... .....	..... ..... .....	..... ..... .....	12.8 ..... .....	..... ..... .....	..... ..... .....	.....	1081	

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.		Reference.				
	Laboratory No.	Kind.	Con-dition.	Mol-ture.	Vola-tile mat-ter.	Fixed car-bon.	Ash.	Sul-phur.	Hy-dro-gen.	Car-bon.	Nitro-gen.	Oxy-gen.	Air-dry-ing loss.		Calo-ries.	British thermal units.	Page of this bulle-tin.	
WYOMING—Continued.																		
CARBON COUNTY—continued.																		
Como—Continued.	3737	B	1	20.33	32.29	44.63	2.75	0.62									316 1086	
			2	40.53	58.02	3.45	.78											316 1086
			3	41.93	58.02													
Same (upper bench, weathered, 73-inch cut).	3738	B	1	18.43	35.09	42.90	3.58	.83									316	
			2	43.02	52.59	4.39	1.07											
			3	44.09	53.01													
Same, SW, $\frac{1}{2}$ SE, $\frac{1}{2}$ sec. 26, T. 22 N., R. 80 W., 150 feet from opening, lower bench, 4-foot cut.	3739	B	1	8.31	39.85	42.34	9.50	1.02									316	
			2	43.46	46.18	10.36	1.60											
			3	48.48	46.18	51.52	1.12											
Copperton, 5 miles southwest of SE, $\frac{1}{2}$ SW, $\frac{1}{2}$ sec. 7, T. 13 N., R. 87 W., Carbonade mine, wall of room 20 feet from main entry, 34-inch cut.	6642	B	1	13.02	33.37	45.51	8.10	1.10									1087	
			2	38.37	52.32	9.31	1.26											
			3	42.31	57.69		1.39											
6 miles southwest of NE, $\frac{1}{2}$ SW, $\frac{1}{2}$ sec. 13, T. 13 N., R. 88 W., Stemp Springs mine, wall of room 10 feet from main entry, 37-inch cut.	6644	B	1	10.78	36.01	46.27	6.94	2.25									1087	
			2	40.36	51.86	7.78	2.52											
			3	43.77	56.23		2.73											
Dixon, 5 miles east of mouth of Savary Creek, SE, $\frac{1}{2}$ SE, $\frac{1}{2}$ sec. 6, T. 12 N., R. 89 W., Angier mine, (main entry, 11-foot bed, 8-foot cut).	5445	B	1	14.29	31.82	48.89	5.00	.46									1088	
			2	37.13	57.04	5.83	.57											
			3	39.43	60.57		.57											
Same (20 feet from mouth, north opening from drift driven to left, 11-foot bed).	5446	B	1	15.21	32.77	48.51	3.51	.60									1088	
			2	38.65	57.21	4.14	.71											
			3	40.32	59.68		.55											
Darling mine, 265 feet in, drift from main entry, 13-foot bed, 72-foot cut.	5449	B	1	14.35	31.85	48.69	5.11	.74									1088	
			2	37.19	56.84	5.97	.64											
			3	39.55	60.45		.68											
7 miles east of 4 miles northwest of Slater, Colo., SW, $\frac{1}{2}$ NW, $\frac{1}{2}$ sec. 9, T. 12 N., R. 89 W., Martin mine, 430 feet from main entry, 8-foot bed, 7-foot cut.	5444	B	1	15.80	33.29	47.47	3.44	.58									1088	
			2	39.54	56.37	4.09	.69											
			3	41.23	58.77		.72											
12 miles east of 4 miles northeast of Slater, Colo., SE, $\frac{1}{2}$ SW, $\frac{1}{2}$ sec. 8, T. 12 N., R. 88 W., Linde opening, 40 feet in, main entry, 8-foot cut.	6803	B	1	16.11	29.02	38.61	16.26	.64									1080	
			2	34.59	46.03	19.38	.76											
			3	42.91	57.09		.94											

Table of chemical analyses—Continued.

Sample.		Proximate.						Ultimate.				Calorific value.		Reference.				
		Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile car- mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.		Air- dry- ing loss.	Calo- ries.	British thermal units.	Page of this bullet- in.
WYOMING—Continued.																		
CARBON COUNTY—continued.																		
Hanna, Hanna No. 1 mine—Continued.																		
Same (upper 5 feet of middle bench).....																		
3608	B	1	9.81	43.39	40.68	6.12	0.51							1.9				316 1092
		2	48.11	45.10	45.10	6.79	.57											
		3	51.61	48.39	48.39	6.64	.61											
Hanna No. 2 mine, sec. 20, T. 22 N., R. 81 W., Hanna																		
No. 2 bed (room 16 entry 4, lower bench, 8-foot																		
3610	B	1	11.45	42.58	39.33	7.50	.38	5.27	59.66	.94	27.11	2.5	6,050	10,890	6,050	10,890	1093	
		2	48.09	44.41	44.41	6.54	.43	4.52	67.37	1.06	19.12		6,832	12,298	6,832	12,298		
		3	51.99	48.01	48.01	7.50	.46	4.88	72.84	1.15	20.67		7,386	13,295	7,386	13,295		
		4	12.34	40.71	42.42	4.53	.23	4.91	73.18	1.15	20.76		7,410	13,338	7,410	13,338		
Same (entry 6, upper 8 feet of middle bench,																		
3611	B	1	12.34	40.71	42.42	4.53	.23					2.6					316 1093	
		2	46.44	48.39	48.39	5.17	.26											
		3	48.97	51.03	51.03	5.19	.27											
Same (1,900 feet south of slope).....																		
3160	A	1	12.32	40.80	41.69	5.19	.23					3.8	6,168	11,102	6,168	11,102	1093	
		2	46.53	47.55	5.92	5.92	.26						7,035	12,663	7,035	12,663		
		3	49.46	50.54			.28						7,478	13,460	7,478	13,460		
Same (2,000 feet south of slope).....																		
3161	A	1	12.66	40.36	43.10	3.88	.21					4.1					332 1093	
		2	46.21	49.35	4.44	4.44	.24											
		3	48.36	51.64			.25											
Same (1,700 feet south of slope, lower bench)....																		
3162	A	1	11.49	40.38	42.24	5.89	.44					4.0					332 1093	
		2	45.62	47.73	6.65	6.65	.50											
		3	48.87	51.13			.54											
Same (1,700 feet south of slope, middle bench)....																		
3163	A	1	11.73	41.30	41.40	5.57	.29					3.5					332 1093	
		2	46.79	46.90	6.31	6.31	.33											
		3	49.04	50.06			.35											
Same (run of mine, sample 1).....																		
3363	C	1	11.30	40.32	41.07	7.31	.28	5.56	61.24	.88	24.73	2.3	5,975	10,755	5,975	10,755	332	
		2	45.46	46.30	8.24	8.24	.32	4.85	69.04	.99	16.56		6,735	12,125	6,735	12,125		
		3	49.55	50.45			.35	5.29	75.24	1.08	18.04		7,342	13,216	7,342	13,216		
Same (run of mine, sample 2).....																		
3396	C	1	12.40	39.75	41.08	6.77	.26	6.37	61.58	.85	24.17	3.8	5,948	10,706	5,948	10,706	332	
		2	45.38	46.89		7.73	.30	5.70	70.30	.97	15.00		6,790	12,222	6,790	12,222		
		3	48.15	50.82		7.73	.33	6.18	76.19	1.05	16.25		7,359	13,246	7,359	13,246		
Same (5,000 feet southwest, room 40 off entry 5,																		
7131	A	1	11.27	37.47	44.74	6.52	.25					5.4	6,031	10,856	6,031	10,856	6 1093	
		2	42.23	50.42		7.35	.28						6,797	12,235	6,797	12,235		
		3	45.58	54.42		7.35	.30						7,336	13,205	7,336	13,205		

Locality, bed, etc.

WYOMING—Continued.

CARBON COUNTY—continued.

Hanna, Hanna No. 1 mine—Continued.

Same (upper 5 feet of middle bench),.....

Hanna No. 2 mine, sec. 20, T. 22 N., R. 81 W., Hanna

No. 2 bed (room 16 entry 4, lower bench, 8-foot

cut),.....

Same (entry 6, upper 8 feet of middle bench,

weathered),.....

Same (1,900 feet south of slope),.....

Same (2,000 feet south of slope),.....

Same (1,700 feet south of slope, lower bench),...

Same (1,700 feet south of slope, middle bench),.....

Same (run of mine, sample 1),.....

Same (run of mine, sample 2),.....

Same (5,000 feet southwest, room 40 off entry 5,

lower bed, 8½ feet),.....

3930	B	1	31.72	29.75	34.94	3.59	44	21.9	316	1100
2		2	43.57	45.99	51.17	5.26	64			
3		3	45.99	46.99	54.01		68			
3807	B	1	39.40	27.67	29.39	3.54	30	30.0	316	1100
2		2	45.66	48.30	5.84		53			
3		3	48.49	51.51			63			
3824	B	1	39.07	29.31	27.94	3.68	103	30.5	316	1100
2		2	48.10	45.86	6.04		63			
3		3	51.19	48.81			110			
5818	B	1	18.98	34.15	40.22	6.65	51	32.52	341	1101
2		2	42.15	40.64	8.21		63	5.074	9,133	
3		3	45.92	54.08			69	1.07	6,263	
3478	B	1	14.12	32.95	46.37	6.56	49	1.17	11,273	
2		2	38.37	53.99	7.64		57	1.07	6,823	
3		3	41.54	58.46			62	7.3		
3477	B	1	13.23	33.57	46.37	6.83	63	6.7	316	1101
2		2	38.69	53.44	7.87		73			
3		3	41.99	58.01			79			
5297	B	1	10.14	33.57	47.55	8.44	49	2.4	341	1101
2		2	37.69	52.92	9.39		55	2.4	6,116	
3		3	41.60	58.40			61	6,806	12,251	
3479	B	1	28.09	27.04	34.55	10.32	29	1.62	7,511	
2		2	37.60	48.05	14.35		40	21.2	13,520	
3		3	43.90	56.10			47			
5324	B	1	19.20	36.46	40.55	3.78	34	2.3	341	1101
2		2	45.12	50.20	4.68		42	2.3	5,401	
3		3	47.34	52.65			44	29.92	9,722	
5815	B	1	17.24	31.88	49.28	1.60	14	15.90	6,684	
2		2	38.52	59.55	1.93		14	16.08	7,012	
3		3	39.28	59.55			17	33.14	5,719	
5340	B	1	13.62	34.55	43.14	8.69	17	5.6	10,294	
2		2	40.00	49.94	10.06		17	6.910	12,438	
3		3	44.47	55.53			17	7.046	12,683	
3538	B	1	12.08	35.40	49.68	2.84	47	1.9	5,734	
2		2	40.26	56.51	3.23		47	1.89	24,66	
3		3	41.00	58.40			55	1.03	14,53	
3544	B	1	11.17	35.42	50.57	2.84	50	16.15	7,394	
2		2	39.87	56.93	3.20		56			
3		3	41.19	58.81			58			
3548	B	1	10.96	38.04	48.59	2.41	29	3.1	316	1102
2		2	42.72	54.57	2.71		33	2.5		
3		3	43.91	56.09			33			
3806	B	1	24.54	32.45	37.38	5.63	24		316	1103
2		2	43.00	49.54	7.46		32			
3		3	46.47	53.53			35			
3526	B	1	13.19	31.70	50.23	4.88	24		316	1103
2		2	36.52	57.86	5.62		28			
3		3	38.69	61.31			30			

Same, in SW. $\frac{1}{2}$ SE. $\frac{1}{2}$ sec. 26, T. 24 N., R. 86 W., (25 feet from mouth of slope, upper 54 feet of 10-foot bed).

14 miles southeast of; NW. $\frac{1}{2}$ NW. $\frac{1}{2}$ sec. 7, T. 24 N., R. 83 W., prospect pit, weathered (lower bench, 43-foot cut).

Same (upper bench, 44-foot cut).

27 miles northwest of; SW. $\frac{1}{2}$ NW. $\frac{1}{2}$ sec. 8, T. 27 N., R. 89 W., old Speyer mine, 44-foot cut.

Rawlins, 3 miles southwest of; NE. $\frac{1}{2}$ NW. $\frac{1}{2}$ sec. 36, T. 21 N., R. 88 W., Dillon mine, 300 feet from mouth of slope, room 1, 44-foot cut).

Same (room 2, 360 feet in, 58-inch cut).

Same (30 feet in, 44-foot bed and cut).

7 miles southeast of; SE. $\frac{1}{2}$ SE. $\frac{1}{2}$ sec. 13, T. 20 N., R. 87 W., survey party opening, 44-foot cut, weathered.

8 miles southeast of; NE. $\frac{1}{2}$ SW. $\frac{1}{2}$ sec. 6, T. 20 N., R. 88 W., Nebraska mine, 180 feet in, 8-foot cut).

8 miles west of; SW. $\frac{1}{2}$ SW. $\frac{1}{2}$ sec. 12, T. 21 N., R. 89 W., surface exposure near Union Pacific R. R., weathered, 6-foot cut.

27 miles southeast of; SE. $\frac{1}{2}$ sec. 4, T. 17 N., R. 90 W., 14 miles east of Sulphur stage station, Robertson opening, base of bed not exposed, 100 feet in, 11-foot bed, 8-foot cut.

Walcott, 24 miles north of; SE. $\frac{1}{2}$ SW. $\frac{1}{2}$ sec. 14, T. 21 N., R. 84 W., Buckley and Ryan mine, 4-foot cut (390 feet northeast of mouth of slope, room 4).

Same (375 feet from mouth, entry 5).

8 miles southeast of; NW. $\frac{1}{2}$ SE. $\frac{1}{2}$ sec. 1, T. 20 N., R. 83 W., near mouth of slope, 844-inch cut.

12 miles north of; SE. $\frac{1}{2}$ SW. $\frac{1}{2}$ sec. 25, T. 23 N., R. 84 W., abandoned prospect $\frac{1}{2}$ mile east of North Platte River, 80 feet in, 7-foot cut, (weathered).

Same, 374 feet in (fresh surface).

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.		Reference.				
	Lab-ora-tory No.	Kind.	Con-dition.	Mois-ture.	Vola-tile mat-ter.	Fixed car-bon.	Ash.	Sul-phur.	Hy-dro-gen.	Car-bon.	Nitro-gen.	Oxy-gen.	Air-dry-ing loss.		Calo-ries.	British thermal units.	Bul-letin No.	Page of this bulle-tin.
WYOMING—Continued.																		
CARBON COUNTY—continued.																		
Walcott—Continued.																		
12½ miles north of; NW. ¼ SW. ¼ sec. 25, T. 23 N., R. 84 W., 700 yards southeast of Shirley Road, ½ mile east of North Platte River, abandoned mine, 7½-foot cut.	3808	B	1	13.59	31.77	49.35	5.29	0.33	5.22	61.06	.83	27.27	4.3	5.785	10,413	316	1103	
			2	36.77	57.11	6.12	.38		4.29	70.66	.96	17.59		6.695	12,051			
			3	39.16	60.84		.41		4.57	75.27	1.02	18.73		7.131	12,836			
			4						4.59	75.58	1.03	18.80		7.152	12,874			
CONVERSE COUNTY.																		
Big Muddy, 2 miles north of; sec. 25, T. 34 N., R. 77 W., Cole Creek mine (680 feet from opening, lower bed, 3½-foot cut).	5325	B	1	22.87	48.03	20.54	8.56	.52					4.4	4.679	8,422	341	1103	
			2	62.27	26.63	11.10	.67							6.066	10,919			
			3	70.05	29.95		.75						4.2	6.824	12,283	341	1103	
Same (960 feet from opening, upper bed, 4½-foot cut).	5326	B	1	22.87	33.94	36.71	6.53	.97						4.956	8,921			
			2	43.94	47.59	8.47	1.26							6.426	11,567			
			3	48.00	52.00		1.38						23.3	7.020	12,635	341	1104	
14 miles north of; sec. 36, T. 36 N., R. 77 W., surface outcrop, 2½-foot cut.	5422	B	1	35.01	28.46	28.82	7.71	.28						3.295	5,931			
			2	43.79	44.35	11.86	.43							5.070	9,126			
			3	49.68	50.32		.49						4.3	5.752	10,354	341	1104	
Douglas, 1½ miles west of; 70 feet from mouth of mine, 2½-inch cut, weathered.	5318	B	1	22.92	42.62	22.25	12.21	.58						4.071	7,328			
			2	55.29	28.87	15.84	.75							5.282	9,508	341	1104	
			3	65.70	34.30			.89					21.4	6.276	11,297	341	1104	
6 miles northwest of; sec. 27, T. 33 N., R. 72 W., La Preh bed, 70 feet northeast of opening, 1½-foot cut, weathered.	5321	B	1	37.86	29.08	22.37	10.69	.35						2.861	5,150			
			2	46.80	36.00	17.20	.56							4.694	8,287			
			3	56.52	43.48		.68						3.3	5.500	10,008	341	1104	
Glenrock, sec. 4, T. 33 N., R. 75 W., Glenrock No. 1 mine, 2,600 feet in, Glenrock bed, 5½-foot cut.	5330	B	1	21.90	34.05	37.38	6.67	.86						6.453	11,615			
			2	43.07	47.86	8.54	1.10							7.086	12,701	341	1104	
			3	47.67	52.33		1.20						1.5	7.086	12,701	341	1105	
½ mile southeast of; sec. 4, T. 33 N., R. 75 W., Glenrock No. 2 mine, 1,100 feet in, Glenrock bed, 6-foot cut.	5322	B	1	19.92	49.25	20.25	10.58	.68						4.851	8,732			
			2	61.50	25.29	13.21	.85							6.088	10,904	341	1105	
			3	70.88	29.14		.99						2.4	6.980	12,564	341	1105	
4 miles southwest of; sec. 12, T. 33 N., R. 75 W., prospect opening, 3-foot cut, weathered.	5320	B	1	15.58	23.28	22.68	38.46	1.17						2.941	5,294			
			2	27.68	26.86	45.56	1.39							3.484	6,271	341	1105	
			3	50.63	40.34		2.53						5.3	6.400	11,520	341	1105	
14 miles north of; sec. 30, T. 36 N., R. 75 W., surface outcrop, 50-inch cut, weathered.	5317	B	1	20.44	30.49	18.68	30.39	.43						3.136	5,645	341	1105	
			2	38.32	23.48	58.20	.54							3.942	7,096			
			3	62.01	37.39		.87							6.379	11,482	341	1105	

		CROOK COUNTY.											
		1776	A	1	2	3	4	5	6	7	8	9	10
Aladdin, Stillwell mine, room 1, off entry 4, or east entry 2 in new works, 750 feet from mouth.	1976	17.74	37.61	33.07	11.55	7.03	5.20	48.10	70	22.58	11.8	5.293	9.527
Same, entry 2, 850 feet from mouth.	1977	18.42	43.73	40.30	14.01	8.05	4.15	56.73	83	10.77	11.8	5.293	9.527
Same (run of mine).	2278	15.12	34.36	33.32	16.70	6.06	3.16	70.61	1.03	13.40	12.0	7.486	13.475
Same (face 700 feet from entry, bituminous, 46-inch bed, 23-inch cut).	9320	17.77	37.56	39.36	5.11	5.60	5.94	55.69	89	26.77	2.9	4.900	8.928
Same (face 700 feet from entry, splint, 46-inch bed, 23-inch cut).	*9321	14.03	36.75	33.29	10.93	7.26	6.10	72.22	1.15	14.86	11.8	5.844	10.519
Croton, NE. 1 sec. 2, T. 52 N., R. 76 W., Croton mine, 120 feet in, Felix bed, 11 feet, 4-foot cut.	6482	25.82	42.75	44.54	12.71	5.78	5.16	65.07	85	21.31	9.7	7.818	14.072
Echeta, NW. 1 NE. 1 sec. 28, T. 52 N., R. 75 W., Echeta mine, 60 feet in, Felix bed, 15 feet from face of entry, 30-foot bed, 8-foot cut, weathered.	6448	23.49	47.90	52.10	6.98	5.00	4.81	67.73	1.08	13.34	13.1	6.828	12.590
Gillette, 1 mile west of; SW. 1 sec. 17, T. 50 N., R. 72 W., Barker mine, 150 feet in, Felix 26-foot bed, 13-foot bench, 7-foot cut.	6512	33.51	29.13	28.89	8.47	3.26	6.16	53.84	1.12	33.90	15.4	5.202	9.364
9 miles north of; NE. 1 sec. 10, T. 51 N., R. 72 W., Hulbert mine, open pit, Lower Ulm bed, 22-foot cut.	6602	28.09	50.21	49.79	5.64	5.02	4.81	71.62	1.12	22.01	26.0	4.370	7.866
ONIS, 5 miles southwest of; sec. 21, T. 57 N., R. 76 W., 8 miles south of Stateline, Kendrick prospect, on Powder River, Powder River (32+foot) bed, middle and upper benches, 94-foot cut.	5402	28.55	29.43	38.31	3.71	2.8	6.43	48.52	76	40.30	14.2	4.574	8.233
Rockefeller ranch, 1 mile east of; T. 56 N., R. 72 W., outcrop south of Elk Creek, Rockefeller mine, 20±-foot bed, a part sampled 7 feet.	*9219	32.72	28.65	31.08	5.15	1.07	4.56	67.91	1.06	20.89	6.402	11.521	12.154
			45.14	51.86	7.65	1.59	4.81	71.62	1.12	22.01	7.033	12.659	
FREMONT COUNTY.													
Hudson, sec. 2, T. 2 S., R. 2 E., Indian mine, 600 feet down slope, west entry 3, 86-inch cut.	6712	21.27	32.83	42.75	3.15	.89	6.13	55.91	.75	33.17	11.6	5.433	9.779
1 mile south of; sec. 28, T. 34 N., R. 98 W., Wyoming Central mine, 500 feet down slope, south entry 2, sample wet, 63-inch cut.	6711	22.98	43.44	56.30	4.00	1.13	4.79	71.02	.95	18.11		6.901	12.422
5 miles northwest of Mitchell mine, 240 feet in, room 1, 43-inch bed, 34-foot cut.	9773	20.11	33.85	36.95	9.09	.87	4.69	69.91	1.45	17.49		5.202	9.364
Lander, 5 miles northeast of; NW. 1 sec. 3, T. 33 N., R. 98 W., Big mine, 8-foot cut, 500 feet in.	4354	21.20	35.85	38.33	4.62	.53	6.08	55.25	1.15	32.37	6.2	5.337	9.615
			48.33	51.67	5.86	.71	4.72	70.11	1.46	17.18		6.798	12.236
							5.01	74.48	1.55	18.25		7.222	13.000
							5.05	75.02	1.56	18.37		7.237	13.063

a Known as the Rockefeller bed.

[illegible]

^a Certain cities and towns now included in Park County are here listed under Blighorn County.

[illegible]

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.					Calorific value.		Reference.			
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vol- atile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.		British thermal units.	Bul- letin No.	Page of this bulle- tin.
WYOMING—Continued.																		
SWEETWATER COUNTY.																		
Alkali Butte south of; sec. 25, T. 34 N., R. 95 W., Signor mine, south entry 1, 100 feet from opening, 50-inch cut.	6710	B	1	26.05	30.74	38.15	5.06	0.61	.....	.....	.....	.....	17.3	4,867	8,761	.....	1125
Black Buttes, sec. 16, T. 18 N., R. 100 W., Black Buttes mine (abandoned), 5½-foot cut, 250 feet in.	5952	B	3	12.85	44.62	55.38	4.31	.88	5.21	60.27	1.47	28.18	3.6	7,065	12,717	341	1126	
1 mile south of; sec. 20, T. 18 N., R. 100 W., Rock Springs-Gibraltar mine (150 feet in, 6½-foot cut).	5808	B	2	18.86	36.64	63.36	4.94	.64	4.34	69.16	1.69	29.23	5.8	7,094	12,769	341	1126	
Same (140 feet in, 4½-foot cut).	5811	B	3	19.42	37.87	62.13	5.07	.60	4.38	72.76	1.78	29.34	6.1	7,040	12,672	341	1126	
Same (70½-inch cut, 355 feet in).	7093	B	2	20.77	38.50	55.87	5.63	.63	4.61	76.53	1.89	16.34	6.1	7,047	10,219	341	1126	
Same (100 feet in).	7170	B	3	18.87	37.58	62.42	4.13	.45	5.93	57.11	1.06	31.76	15.6	5,507	9,913	381	1126	
Same (50 feet in).	7103	B	2	17.22	37.57	62.43	4.23	.36	4.54	76.88	1.76	15.06	7.9	5,607	10,093	381	1126	
Same (150 feet in).	7097	B	2	18.69	36.63	58.26	5.11	.42	4.17	67.91	1.82	20.57	13.1	5,216	9,389	381	1126	
Same (225 feet in).	7096	B	3	19.54	37.68	62.32	4.40	.44	4.39	71.57	1.92	21.68	13.1	6,341	11,954	381	1126	
3 miles north of; NE, ¼ sec. 28, T. 19 N., R. 100 W., Rock Springs-Sioux City mine, 21-foot bed, 8-foot cut.	5930	B	2	16.65	29.23	48.35	4.59	.54	4.56	71.89	1.73	16.69	14.5	6,865	12,357	381	1126	
3 miles northwest of; 1 mile southeast of Italyville, sec. 31, T. 19 N., R. 100 W., prospect pit (175 feet in, 5½-foot cut).	5810	B	3	15.14	32.58	47.88	5.47	.46	4.62	71.27	1.74	16.44	6.1	7,195	12,951	381	1126	
Same (90 feet in, 6½-foot cut).	5951	B	1	13.92	29.50	52.49	4.40	.52	4.37	75.81	1.38	17.88	3.7	6,785	12,231	341	1127	
							5.19	.77					6.2	7,290	10,379	341	1127	
							4.09	.52					6.2	5,776	10,397	341	1127	

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.			Reference.			
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Volu- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.		British thermal units.	Bul- letin No.	Page of this bulle- tin.
WYOMING—Continued.																		
SWEETWATER COUNTY—continued.																		
Point of Rocks, Point of Rocks mine—Continued.																		
Same (500 feet north, main heading, Upper 61-foot bed).	7094	B	1	17.92	29.51	49.30	3.27	0.50	5.87	59.46	1.24	29.66	12.4	5,678	10,220		381	1129
			2	35.96	60.06		3.98	.61	4.73	72.44	1.51	16.73		6,913	12,452			
			3	37.44	62.56			.64	4.93	75.44	1.57	17.42		7,204	12,967			
Same (1,000 feet north, main heading, 61-inch cut, Upper bed).	7102	B	1	18.83	29.45	48.20	3.52	.55	5.90	58.97	1.21	29.85	13.6	5,619	10,114		381	1129
			2	36.28	59.38		4.34	.68	4.69	72.65	1.49	16.15		6,923	12,461			
			3	37.93	62.07			.71	4.90	75.95	1.56	16.88		7,237	13,027			
Rock Springs, sec. 35, T. 19 N., R. 105 W., Union Pacific No. 1 mine, in room 66; No. 1 bed, 83-inch cut.	5358	B	1	8.83	35.60	50.39	5.48	.78	5.36	66.15	1.19	21.04	2.3	6,574	11,833		341	1130
			2	38.92	55.09		5.99	.85	4.82	72.32	1.30	14.72		7,187	12,937			
			3	41.40	58.60			.90	5.13	76.93	1.38	15.66		7,645	13,761			
1± mile nearly east of sec. 26, T. 19 N., R. 105 W., Sweetwater No. 2 mine, No. 7 bed, 54-foot cut.	5359	B	1	9.76	32.62	48.58	9.04	.90	5.52	63.76	1.12	19.66	2.8	6,280	11,304		341	1130
			2	36.15	53.83		10.02	1.00	4.92	70.66	1.24	12.16		6,959	12,526			
			3	40.18	59.82			1.11	5.47	78.53	1.38	13.51		7,734	13,921			
Same, Union Pacific old No. 5 mine, 20 feet in, No. 5 bed, 38-inch cut.	5357	B	1	10.94	30.80	42.70	15.56	1.01	4.83	53.95	.87	23.78	1.5	5,214	9,385		341	1130
			2	34.58	47.95		17.47	1.37	4.05	60.58	.98	15.79		5,854	10,537			
			3	41.90	58.10			1.37	4.91	73.40	1.19	19.13		7,093	12,707			
1½ miles northeast of sec. 25, T. 19 N., R. 105 W., Union Pacific No. 3 mine, No. 7 bed, 29-inch cut.	5363	B	1	14.43	33.30	47.10	5.17	.99	5.55	61.47	1.14	25.68	4.2	6,086	10,955		341	1131
			2	38.92	55.03		6.05	1.15	4.59	71.83	1.33	15.05		7,113	12,803			
			3	41.43	58.57			1.22	4.89	76.46	1.42	16.01		7,571	13,628			
Same, Union Pacific No. 8 mine, No. 7 bed, 90½-inch cut.	5361	B	1	14.51	34.17	47.24	4.08	1.02	.....	.....	.....	.....	4.1	6,167	11,101		341	1131
			2	39.97	55.26		4.77	1.19	.....	.....	.....	.....	.....	7,214	12,985		381	
			3	41.97	58.03			1.25	.....	.....	.....	.....	.....	7,575	13,635			
Same, Union Pacific No. 9 mine, No. 7 bed, in room 23, 7-foot cut.	5362	B	1	13.51	33.62	49.17	3.70	1.46	4.71	74.78	1.27	25.88	3.8	6,271	11,288		381	1131
			2	38.87	56.85		4.28	1.67	.....	.....	.....	.....	.....	7,249	13,048			
			3	40.61	59.39			1.77	.....	.....	.....	.....	.....	7,573	13,631			
Same, Union Pacific No. 10 mine, No. 7 or Rock Springs bed (5,200 feet north of slope, 90-inch cut).	3164	A	1	12.41	36.57	48.50	2.52	.80	.....	.....	.....	.....	.....	6,622	11,920		332	1132
			2	41.75	55.37		2.88	.91	.....	.....	.....	.....	.....	7,500	13,608		336	
			3	42.99	57.01			.94	.....	.....	.....	.....	.....	7,784	14,011		13	
Same (7,000 feet north of slope, 86-inch cut).....	3165	A	1	13.10	34.97	48.59	3.34	1.04	.....	.....	.....	.....	.....	.....	.....		332	1132
			2	40.24	55.92		3.84	1.20	.....	.....	.....	.....	.....	.....	.....
			3	41.85	58.15			1.25	.....	.....	.....	.....	.....	.....	.....
Same (run of mine).....	3213	C	1	11.64	36.37	48.58	3.41	.81	5.72	66.08	1.43	22.55	6.0	6,538	11,768		332	.....
			2	41.16	54.98		3.86	.92	5.01	74.78	1.62	13.81		7,399	13,318			.....
			3	42.81	57.19			.95	5.21	77.79	1.68	14.37		7,697	13,855			.....
			4	.....	.....				5.27	78.54	1.70	14.49		7,749	13,948			.....

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.				Ultimate.				Calorific value.		Reference.					
	Lab-ora-tory No.	Kind.	Con-dition.	Mois-ture.	Vola-tile mat-ter.	Fixed car-bon.	Ash.	Sul-phur.	Hy-dro-gen.	Car-bon.	Nitro-gen.	Oxy-gen.		Air-dry-ing loss.	Calo-ries.	British thermal units.	Bul-bet-in No.	Page of this bulle-tin.
WYOMING—Continued.																		
SWEETWATER COUNTY— continued.																		
Superior, sec. 20, T. 21 N., R. 102 W., Superior C mine, 1,400 feet in, 7½-foot bed.	5596	B	1	13.15	33.07	48.87	4.91	1.15						6.341	11,360	341	1137	
			2	38.08	56.27	5.65	1.32								7.267	13,081		
			3	40.36	59.64		1.40									7.702	13,864	
Same, 1,845 feet in, main entry, 8-foot cut.	5695	B	1	13.67	32.43	51.00	2.90	.72	5.83	1.19	23.43	6.424	11,563	341	1137			
			2	37.57	59.07	3.36	.83	4.99	76.37	1.38	13.07	7.441	13,394					
			3	38.88	61.12		.86	5.16	79.03	1.43	13.52	7.700	13,860					
Same, room 1, off north level 4, 1,500 feet north-east from drift mouth, 7½-foot cut.	7474	A	1	13.41	32.48	49.70	4.41	1.01								341	1137	
			2	37.51	57.40	5.09	1.17											
			3	39.52	60.48		1.23											
Same, Superior D mine, 380 feet in, 8-foot cut, No. 1 bed.	5598	B	1	13.76	31.52	50.52	4.20	1.30	5.70	1.09	23.93	6.348	11,426	341	1137			
			2	31.55	58.78	4.87	1.51	4.84	73.96	1.26	13.56	7.361	13,250					
			3	38.42	61.58		1.59	5.09	77.75	1.32	14.25	7.738	13,928					
Same, 400 feet in, main drift, 8-foot cut, No. 1 bed.	5786	B	1	14.63	34.14	47.69	3.54	1.01	5.81	1.33	24.86	6.321	11,378	341	1137			
			2	33.09	53.86	4.15	1.18	4.90	74.32	1.56	13.89	7.404	13,327					
			3	41.72	58.28		1.23	5.11	77.54	1.63	14.49	7.725	13,905					
Same, prospect pit on west side of valley, No. 3 bed, 7-foot cut.	6043	B	1	18.35	31.55	48.46	1.64	.52	4.49	1.23	33.75	5.374	9,073	341	1138			
			2	40.23	57.77	2.00	.63	4.23	70.25	1.50	21.39	6.582	11,848					
			3	41.05	58.95		.84	4.32	71.68	1.53	21.83	6.716	12,089					
Sec. 27, T. 21 N., R. 102 W., Superior A mine, face of dip room, off north entry 2, 800 feet northeast of entrance, No. 7 bed, 6-foot 2½-inch cut.	7475	A	1	12.63	32.57	52.04	3.36	.95								341	1138	
			2	37.03	59.15	3.82												
			3	38.50	61.50		.99											
Same, 6½-foot cut in entry 2, No. 1 bed.	5926	B	1	10.55	34.79	50.42	4.24	.86	5.66	1.27	20.85	6.756	12,161	341	1138			
			2	38.89	56.37	4.74	.90	5.02	75.04	1.42	12.82	7.553	13,595					
			3	40.83	59.17		1.01	5.27	78.78	1.49	13.45	7.929	14,272					
Same, 1,000 feet in, main drift, No. 7 bed, 8½-inch cut.	5928	B	1	12.70	32.82	49.94	4.54	.76	5.81	1.12	22.63	6.512	11,722	341	1138			
			2	37.59	57.21	5.20	.87	5.04	74.62	1.28	12.99	7.469	13,426					
			3	39.65	60.35		.92	5.32	78.72	1.35	13.69	7.868	14,162					
miles north of NE. ¼ NE. ¼ sec. 10, T. 21 N., R. 102 W., prospect pit (60 feet in, lower 75 inches of 83½-inch bed).	5997	B	1	25.70	27.70	40.69	5.91	.29	5.17	1.07	38.46	10.7	4,331	341	1139			
			2	37.28	54.77	7.95	.39	3.11	66.08	1.44	21.03	5.829	10,492					
			3	40.50	59.50		.42	3.38	71.79	1.56	22.85	6.333	11,399					
Same (50 feet in, 78½-inch bed, 63-inch cut)	5999	B	1	23.56	30.20	40.75	5.49	.33						9.3	4,267	341	1139	
			2	39.51	53.31	7.18	.43											
			3	42.57	57.43		.46											

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.		Reference.			
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.		Calo- ries.	British thermal units.	Page of this bulle- tin.
WYOMING—Continued.																	
SWEETWATER COUNTY—continued.																	
Superior—Continued.																	
12 miles northwest of; sec. 34, T. 22 N., R. 104 W., prospect pit, 40 feet in, 4½-foot cut.	5350	B	1	26.26	32.13	37.47	4.14	0.39	5.46	47.16	1.23	41.62	11.7	4,007	7,321	341	1144
			2	.....	43.58	50.80	5.62	.53	3.45	63.96	1.66	24.78	.....	5,516	9,929		
			3	.....	46.17	53.83	.....	.56	3.66	67.77	1.76	26.25	.....	5,844	10,519		
12 miles west of; SW ¼ NE ¼ sec. 17, T. 21 N., R. 104 W., surface exposure, 4-foot cut.	5375	B	1	31.37	29.00	28.91	10.12	1.27	5.43	37.03	.79	45.36	14.2	3,130	5,634	341	1144
			2	.....	43.13	42.12	14.75	1.85	2.83	53.96	1.15	25.46	.....	4,561	8,210		
			3	.....	50.59	49.41	.....	2.17	3.32	63.30	1.35	29.86	.....	5,350	9,630		
12½ miles west of; NW ¼ SE ¼ sec. 29, T. 21 N., R. 104 W., prospect pit, 5½-foot cut.	5374	B	1	22.14	31.34	41.85	4.67	.80	3.52	62.40	.93	35.65	12.5	4,868	8,762	341	1144
			2	.....	40.25	53.75	6.00	1.03	4.27	67.30	1.19	20.51	.....	6,252	11,254		
			3	.....	42.82	57.18	.....	1.10	4.22	71.59	1.27	21.82	.....	6,631	11,972		
13 miles northwest of; sec. 21, T. 23 N., R. 103 W., Hooten prospect (abandoned), 60 feet in, Crookston bed, 5-foot cut.	5804	B	1	14.75	31.98	48.99	4.28	.43	5.05	68.90	1.31	30.38	4.8	5,478	9,860	341	1144
			2	.....	39.49	60.51	5.02	.58	4.21	72.54	1.38	21.34	.....	6,426	12,179		
			3	.....	39.49	60.51	5.02	.58	4.21	72.54	1.38	21.34	.....	6,426	12,179		
15 miles northwest of; sec. 24, T. 23 N., R. 104 W., Hooten mine, 65 feet in, 8-foot bed (lower 3 feet).	5803	B	1	20.33	31.43	43.03	5.21	.98	5.92	55.97	1.12	30.80	9.7	5,495	9,891	341	1144
			2	.....	42.21	57.79	.....	1.32	4.91	75.17	1.51	17.09	.....	7,380	13,284		
			3	.....	42.21	57.79	.....	1.32	4.91	75.17	1.51	17.09	.....	7,380	13,284		
5802	B	1	22.52	30.83	41.83	4.82	.96	.06	5.82	52.44	.96	35.00	10.7	5,495	9,891	341	1144
			2	.....	39.79	53.99	6.22	1.24	4.28	67.68	1.24	19.34	.....	6,406	11,630		
			3	.....	42.05	54.24	3.11	1.13	4.28	67.68	1.24	19.34	.....	6,406	11,630		
Same (upper 5 feet).....			1	8.80	38.00	49.46	2.84	.99	.....	.....	1.32	20.63	1.4	6,889	12,400	5	1145
			2	.....	42.05	54.24	3.11	1.13	.....	.....	.....	.....	.....	.....	.....	.....
			3	.....	42.05	54.24	3.11	1.13	.....	.....	.....	.....	.....	.....	.....	.....
Sweetwater, Sweetwater mine, No. 7 bed, 7,900 feet north (entry 10, 6-foot cut).	945D	A	1	9.03	38.43	49.91	2.63	.88	.....	.....	.....	.....	.....	6,935	12,483	5	1145
			2	.....	44.02	55.98	.....	.....	.....	.....	.....	.....	.....	7,623	13,721	.....
			3	.....	44.02	55.98	.....	.....	.....	.....	.....	.....	.....	7,623	13,721	.....
Same (room off entry 4½, 71-inch cut).....			1	8.64	42.24	54.87	2.89	.97	.....	.....	.....	.....	.....	6,764	12,175	.....
			2	.....	43.50	55.50	.....	.....	.....	.....	.....	.....	.....	7,404	13,327	.....
			3	.....	43.50	55.50	.....	.....	.....	.....	.....	.....	.....	7,404	13,327	.....
Same (run of mine).....			1	27.38	30.34	37.74	4.54	1.09	5.63	69.55	1.53	17.71	.....	7,705	14,032	.....
			2	.....	42.11	52.87	5.02	1.19	5.00	76.13	1.67	10.99	.....	7,705	14,032	.....
			3	.....	42.11	52.87	5.02	1.19	5.00	76.13	1.67	10.99	.....	7,705	14,032	.....
Sycamore, sec. 23, T. 20 N., R. 102 W., outcrop in rail- road cut; 4-foot bed, weathered.	5813	B	1	33.79	29.34	37.74	6.25	1.06	5.81	45.12	1.74	25.01	9.5	4,103	7,385	341	1145
			2	.....	41.78	51.97	6.25	1.06	5.81	45.12	1.74	25.01	9.5	4,103	7,385	.....
			3	.....	41.78	51.97	6.25	1.06	5.81	45.12	1.74	25.01	9.5	4,103	7,385	.....
1 mile west of; sec. 29, T. 20 N., R. 102 W., surface outcrop, badly weathered, 28-inch cut.	5809	B	1	33.79	29.35	30.71	6.15	.64	4.06	66.27	1.86	26.68	.....	5,650	10,170	.....
			2	.....	44.57	55.43	.....	1.13	4.06	66.27	1.86	26.68	.....	6,027	11,285	.....
			3	.....	44.57	55.43	.....	1.13	4.06	66.27	1.86	26.68	.....	6,027	11,285	.....
			1	33.79	29.35	30.71	6.15	.64	4.06	66.27	1.86	26.68	.....	3,356	6,042	341	1145
			2	.....	44.33	46.37	9.30	.97	3.18	59.34	1.75	25.46	.....	5,068	9,122	.....
			3	.....	44.33	46.37	9.30	.97	3.18	59.34	1.75	25.46	.....	5,068	9,122	.....

3 miles northeast of; sec. 16, T. 20 N., R. 102 W., prospect pit, 5 feet in, 31-foot cut.	5814	B	1	28.50	30.59	35.16	4.75	.37	5.86	44.50	1.10	43.42	10.9	3.772	6.790	341	1145
			2		40.59	40.87	6.74	.22	3.61	63.12	1.56	24.40		5.350	9.630		
			3		46.53	53.47		.49	3.92	67.08	1.27	28.17		7.737	10.327	341	1146
3 miles northwest of; sec. 18, T. 20 N., R. 102 W., prospect pit, 6 feet in, 19-inch cut.	5812	B	1	22.93	33.69	39.33	4.03	.74	5.01	48.71	1.26	39.65	8.0	4.416	7.949		
			2		43.71	51.06	3.23		3.97	63.20	1.63	25.01		7.730	10.314		
			3		46.12	53.88		1.01	4.19	66.69	1.72	26.39		6.046	10.883		
UNTA COUNTY.																	
Almy, SE, $\frac{1}{2}$ sec. 30, T. 16 N., R. 120 W., No. 5 mine, 3,000 feet from mouth, room 5, entry 12, lower 8 feet of 24-foot Main Almy bed.	2225	B	1	14.43	36.81	41.54	7.22	.21	5.37	59.97	1.15	26.08	6.7	5.804	10.447	285	1146
			2		43.02	48.54	8.44	.25	4.41	70.08	1.34	13.48		6.783	12.209	56	
			3		46.98	53.02		.27	4.81	76.54	1.47	16.91		7.422	13.364		
7 miles north of; NW, $\frac{1}{2}$ sec. 33, T. 17 N., R. 120 W., Michigan-Wyoming mine, 40 feet in, Almy bed, 43-inch cut.	2226	B	1	14.11	35.34	34.40	16.15	4.45	5.30	48.91	.82	24.37	6.9	4.898	8.816	285	1146
			2		41.15	40.05	18.80	6.18	4.34	55.95	1.95	13.78		5.703	10.265	56	
			3		30.67	49.53		6.38	5.35	70.13	1.18	16.96		7.023	12.641		
			4	19.02	39.68	27.83	13.47	2.60	5.26	74.52	1.26	28.11		7.348	13.226	316	1147
Bondurant, 2 miles southwest of; NW, $\frac{1}{2}$ NE, $\frac{1}{2}$ sec. 31, T. 38 N., R. 113 W., Fall River bed, 1-foot cut, weathered.	3892	B	1		48.00	34.37	16.63	3.21	3.89	59.29	1.58	15.40		5.757	10.363		
			2		35.77	41.22		3.85	4.07	71.11	1.90	18.47		6.905	12.429		
			4		38.78				4.85	73.96	1.97	19.22		7.091	12.764	316	1147
			4	16.51	32.67	37.57	13.25	4.35	5.15	49.38	.99	26.88	4.3	4.757	8.563		
24 miles southwest of; NW, $\frac{1}{2}$ SE, $\frac{1}{2}$ sec. 31, T. 38 N., R. 113 W., Fall River bed, 3-foot surface cut, weathered.	3893	B	1		39.13	45.00	15.87	6.19	3.98	59.14	1.19	14.61		5.698	10.256		
			2		46.51	53.49			4.73	70.30	1.41	17.37		6.773	12.191		
			4						5.01	74.91	1.26	15.30	3.5	7.071	13.728	316	1147
13 miles southwest of; NW, $\frac{1}{2}$ NW, $\frac{1}{2}$ sec. 33, T. 37 N., R. 115 W., prospect pit, 54-foot bed, 32-inch cut.	4303	B	1	5.49	35.88	55.51	3.12	.91	5.26	74.15	1.26	15.30	3.5	7.071	13.728		
			2		37.96	58.74	3.30	.96	4.92	78.46	1.31	11.40		8.249	14.848		
			3		39.25	60.75		.99	5.09	69.67	1.01	10.56	1.6	7.150	12.870	316	1147
14 miles southwest of; NE, $\frac{1}{2}$ NE, $\frac{1}{2}$ sec. 32, T. 37 N., R. 115 W., prospect pit on Willow Creek, 2-foot cut, weathered.	4300	B	1		33.90	50.59	10.02	.92	5.09	69.67	1.01	10.56		7.409	13.336		
			2		37.20	52.42	10.38	.95	4.87	72.19	1.05	12.66		8.197	14.359		
			3		41.51	58.49		1.06	5.43	80.55	1.17	11.79		8.267	14.881		
			4						5.49	81.42	1.18	11.91		8.331	14.986		
15 miles southwest of; SE, $\frac{1}{2}$ SW, $\frac{1}{2}$ sec. 32, T. 37 N., R. 115 W., prospect pit, 24-foot cut, weathered.	4006	B	1	14.36		48.73	4.43	3.16	5.33	60.67	1.30	24.71	5.7	5.724	10.303	316	1147
			2		37.93	56.89	5.18		4.36	70.84	1.52	13.91		6.684	12.031		
			3		40.00	60.00		4.38	4.61	74.71	1.60	14.70		7.019	12.688		
			4						4.82	78.13	1.67	15.38		7.269	13.084		
15 $\frac{1}{2}$ miles southwest of; NW, $\frac{1}{2}$ NE, $\frac{1}{2}$ sec. 11, T. 36 N., R. 116 W., surface prospect on Willow Creek, 27-inch cut.	4005	B	1	21.60	29.16	42.34	6.90	.99	4.90	53.04	1.07	32.51	10.7	4.962	8.932	316	1148
			2		37.19	54.01	8.80	.26	3.94	67.65	1.36	16.99		6.329	11.362		
			3		40.78	59.22		1.38	4.32	74.18	1.50	18.62		6.940	12.462		
			4						4.38	75.22	1.52	18.88		7.006	12.611		
			4	3.67	36.30	56.59	3.44	.70	5.66	77.17	.84	12.19	1.3	7.613	13.703	316	1148
16 miles southwest of; SW, $\frac{1}{2}$ NE, $\frac{1}{2}$ sec. 11, T. 36 N., R. 116 W., 100-foot drift tunnel on Willow Creek, 6-foot bed, 44-foot cut.	4299	B	1		37.68	58.75	3.57	.73	5.45	80.11	.87	9.27		7.903	14.225		
			2		39.08	60.92		.75	5.65	83.08	.90	9.62		8.195	14.751		
			3						5.69	83.71	.91	9.69		8.241	14.884		
			4	10.06	32.91	53.30	3.70	.38	5.27	66.94	1.29	22.42	4.6	6.404	11.635	316	1148
16 miles west of; SW, $\frac{1}{2}$ SE, $\frac{1}{2}$ sec. 1, T. 37 N., R. 116 W., prospect pit, 3-foot cut, weathered.	4003	B	1		36.62	59.27	4.11	.42	4.61	74.43	1.43	15.00		7.187	12.937		
			2		38.20	61.80		.44	4.81	77.62	1.50	15.63		7.495	13.491		
			3						4.83	77.96	1.50	15.71		7.518	13.532		
			4	6.81	33.42	53.59	6.18	.62	4.81	69.45	1.52	17.42	2.3	6.753	12.155	316	1149
16 miles west of; SW, $\frac{1}{2}$ SE, $\frac{1}{2}$ sec. 1, T. 37 N., R. 116 W., prospect pit on Willow Creek (lower bed, 2-foot cut).	4302	B	1		35.86	57.51	6.63	.67	4.35	74.52	1.63	12.20		7.246	13.043		
			2		38.41	61.59		.71	4.65	79.82	1.75	13.07		7.761	13.970		
			3						4.69	80.39	1.76	13.16		7.801	14.042		
			4														

^a No. 4,302 cut 40 feet below No. 4,301.

Table of chemical analyses—Continued.

Sample.		Proximate.				Ultimate.			Calorific value.		Reference.					
Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Volu- tile car- mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Calo- ries.	British thermal units.	Bul- letin No.	Page of this bulle- tin.
WYOMING—Continued.																
UINTA COUNTY—continued.																
Bondurant, prospect pit—Continued.																
Same (2½-foot cut <i>a</i> , weathered.) Upper Fron- tier bed.																
4301	B	1	10.70	30.67	54.35	4.28	0.78	5.34	66.18	1.45	21.97	6.0	6,357	11,443	316	1149
		2		34.34	60.87	4.79	.87	4.55	74.11	1.62	13.96		7,119	12,814		
		3		36.07	63.93		.92	4.88	77.84	1.72	14.79		7,477	13,459		
		4						4.93	78.56	1.72	14.79		7,524	13,544		
4001	B	1	6.91	31.91	51.86	9.32	1.54	5.01	65.52	1.01	17.60	3.0	6,373	11,471	316	1149
		2		34.28	55.71	10.01	1.65	5.05	70.39	1.08	12.32		6,846	12,323		
		3		38.09	61.91		1.83	5.06	78.22	1.20	13.69		7,007	13,693		
4323	B	1	7.80	36.25	54.33	1.62	.27	4.55	70.34	1.43	20.99	3.6	7,093	12,767	316	1149
		2		39.32	58.92	1.76	.29	4.86	76.29	1.55	15.25		7,683	13,847		
		3		40.02	59.98		.30	4.95	77.66	1.58	15.51		7,831	14,096		
		4						4.96	77.89	1.58	15.57		7,847	14,125		
2245	B	1	6.78	39.79	47.43	6.00	.43	5.56	69.01	1.12	17.88	2.6	6,815	12,267	285	1150
		2		42.68	50.88	6.44	.46	5.16	74.03	1.20	12.71		7,310	13,158		56
		3		45.62	54.38		.49	5.51	79.12	1.28	13.60		7,813	14,063		
		4						5.54	79.51	1.29	13.66		7,840	14,112		
2284	B	1	5.13	40.51	49.75	4.61	.49	5.63	72.95	1.18	15.14	1.3	7,202	12,964	285	1150
		2		42.70	52.44	4.86	.52	5.33	76.89	1.24	11.16		7,591	13,664		56
		3		44.88	55.12		.54	5.61	80.82	1.31	11.72		7,979	14,362		
		4						5.64	81.26	1.31	11.79		8,010	14,418		
2286	B	1	5.80	39.49	51.00	3.65	1.07	5.27	72.96	1.08	15.67	2.0	7,102	12,784	285	1150
		2		41.95	54.17	3.88	1.14	5.23	77.50	1.15	11.10		7,544	13,579		56
		3		43.64	56.36		1.18	5.44	80.63	1.19	11.56		7,848	14,126		
		4						5.50	81.60	1.21	11.69		7,915	14,247		
2287	B	1	5.89	37.59	49.01	7.51	1.39	5.28	68.48	1.07	16.27	2.4	6,870	12,366	285	1150
		2		38.94	52.08	7.98	1.48	4.92	72.77	1.14	11.71		7,300	13,140		56
		3		43.40	56.60		1.61	5.35	79.07	1.24	12.73		7,933	14,279		
		4						5.43	80.37	1.26	12.94		8,026	14,447		
2285	B	1	3.96	36.16	55.11	4.77	.77	5.17	76.03	1.31	11.95	1.4	7,501	13,502	56	1151
		2		37.65	57.38	4.97	.80	4.93	79.16	1.36	8.78		7,810	14,058		
		3		39.62	60.38		.84	5.18	83.29	1.44	9.25		8,218	14,792		
		4						5.23	84.02	1.45	9.30		8,270	14,886		
3572	B	1	6.88	38.05	51.52	3.55	1.76	5.23	70.62	.99	17.80	2.5	7,572	12,692	316	1151
		2		40.86	55.33	3.81	1.89	4.85	75.84	1.06	12.55		7,572	13,630		

17 miles west of; sec. 11, T. 36 N., R. 116 W., surface prospect, 3½-foot cut.

25 miles southwest of; T. 36 N., R. 118 W., surface prospect of John Day River, 3-foot cut, weathered.

Cumberland, 1 mile west of; sec. 31, T. 19 N., R. 116 W., Cumberland No. 1 mine, 2,100 feet west and 2,600 feet south of mouth, south entry 7, Main Kemmerer bed, 8-foot cut.

Diamondville, sec. 25, T. 21 N., R. 116 W., No. 1 mine, 160 feet west and 3,460 feet north of mouth, room 45, entry 1, Main Kemmerer bed, 6½-foot cut.

Frontier, sec. 12, T. 21 N., R. 116 W., Kemmerer No. 1 mine (850 feet in, Lower or A (6½-foot) bed, 40 feet below main bed, 72-inch cut).

Same (600 feet west and 2,850 feet south of opening, room 46, south entry 3, 9-foot cut). Main Kemmerer bed.

5 miles north of; SW. ¼ NW. ¼ sec. 19, T. 22 N., R. 115 W., Willow Creek opening, 150 feet from mouth, Willow Creek bed, 3-foot cut.

12 miles north of; SW. ¼ NW. ¼ sec. 2, T. 23 N., R. 116 W., Willow Creek mine, 77-inch cut.

4002	B	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215	1216	1217	1218	1219	1220	1221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a No. 4302 cut 40 feet below No. 4301.

Sample 3202 taken below 3203; the two samples combined represent a thickness of 23 feet in middle section of 83-foot bed.

Table of chemical analyses—Continued.

Locality, bed, etc.	Sample.		Proximate.					Ultimate.				Calorific value.		Reference.				
	Lab- ora- tory No.	Kind.	Con- di- tion.	Mois- ture.	Vola- tile mat- ter.	Fixed car- bon.	Ash.	Sul- phur.	Hy- dro- gen.	Car- bon.	Nitro- gen.	Oxy- gen.	Air- dry- ing loss.	Colo- ries.	British thermal units.	Bul- letin No.	Page of this bulle- tin.	
WYOMING—Continued.																		
UNTA COUNTY—continued.																		
Stanley, 8 miles south of; NE. $\frac{1}{2}$ NW. $\frac{1}{2}$ sec. 1, T. 28 N., R. 114 W., prospect pit, 24-foot cut.	3695	B	1	35.70	23.85	28.02	7.43	0.58	6.31	37.16	.87	47.65	22.6	3,247	5,845	316	1154	
			2		44.87	43.57	11.56	.90	3.64	57.79	1.35	24.76		5,050	9,090			
			3		50.73	49.27		1.02	4.11	65.34	1.53	28.00		5,710	10,278			
			4						4.17	66.02	1.55	28.26		5,745	10,341			
8½ miles south of; SW. $\frac{1}{2}$ NW. $\frac{1}{2}$ sec. 1, T. 28 N., R. 114 W., 210 feet in, prospect tunnel, 34-foot cut.	3700	B	1	27.56	31.00	31.77	9.67	.90	5.69	40.46	1.05	42.23	18.1	3,667	6,601	316	1154	
			2		42.79	43.86	13.35	1.24	3.63	55.86	1.45	24.47		5,062	9,112			
			3		49.39	50.61		1.43	4.19	64.46	1.67	28.25		5,842	10,516			
			4						4.25	65.40	1.70	28.65		5,895	10,611			
9 miles south of; SE. $\frac{1}{2}$ SE. $\frac{1}{2}$ sec. 12, T. 28 N., R. 114 W., (prospect pit, 50-inch cut, weathered).	3694	B	1	32.18	30.81	31.60	5.41	.48	5.87	38.29	.67	49.28	21.3	3,516	6,329	316	1154	
			2		45.43	46.59	7.98	.71	3.38	56.46	.99	30.48		5,184	9,331			
			3		49.37	50.63		.77	3.67	61.35	1.07	33.14		5,634	10,141			
			4						3.70	61.83	1.08	33.39		5,660	10,188			
Same, Grigg's prospect (125-foot drift, 8-foot cut), Labarge Mountain bed.	3699	B	1	19.62	32.71	42.51	5.16	1.02	6.00	55.47	.97	31.38	10.6	5,399	9,718	316	1155	
			2		40.69	52.89	6.42	1.27	4.75	69.01	1.21	17.34		6,717	12,091			
			3		43.49	56.51		1.36	5.08	73.74	1.29	18.53		7,177	12,919			
			4						5.15	74.76	1.31	18.78		7,245	13,041			
Viola, 2 miles northeast of; SE. $\frac{1}{2}$ NW. $\frac{1}{2}$ sec. 7, T. 26 N., R. 113 W., Sayley mine, 180-foot drift, 6-foot cut.	3698	B	1	22.92	34.46	40.14	2.48	.73	6.37	55.71	.94	33.77	12.7	5,403	9,833	316	1155	
			2		44.70	52.08	3.22	.95	4.96	72.27	1.22	17.38		7,087	12,757			
			3		46.19	53.81		.98	5.12	74.68	1.26	17.96		7,323	13,181			
			4						5.17	75.42	1.27	18.14		7,374	13,273			
4 miles northeast of; SE. $\frac{1}{2}$ SW. $\frac{1}{2}$ sec. 32, T. 27 N., R. 113 W., prospect pit, 84-foot cut.	3693	B	1	22.38	35.77	38.84	3.01	1.86	6.36	54.60	.91	33.26	11.6	5,359	9,637	316	1155	
			2		46.08	50.04	3.88	2.49	4.99	70.34	1.17	17.22		6,904	12,427			
			3		47.94	52.06			5.19	73.18	1.22	17.92		7,176	12,917			
			4						5.32	75.05	1.25	18.38		7,302	13,144			
5 miles northeast of; SW. $\frac{1}{2}$ NE. $\frac{1}{2}$ sec. 29, T. 27 N., R. 113 W., surface opening, 34-foot cut, Labarge Mountain bed.	3697	B	1	29.02	31.34	31.72	7.92	1.35	5.43	38.61	.79	45.90	19.3	3,422	6,160	316	1156	
			2		44.15	44.69	11.16	2.14	3.31	54.40	1.11	28.32		4,821	8,678			
			3		49.70	50.30			3.50	61.23	1.25	31.88		5,427	9,769			
			4						3.58	62.57	1.28	32.57		5,497	9,895			
12 miles southwest of; SW. $\frac{1}{2}$ SW. $\frac{1}{2}$ sec. 17, T. 25 N., R. 115 W., prospect pit, 3-foot cut, weathered.	3696	B	1	25.55	33.82	37.61	3.02	.41	5.80	49.29	.94	40.54	16.5	4,507	8,113	316	1156	
			2		45.43	50.51	4.06	.55	3.98	66.21	1.26	23.94		6,054	10,897			
			3		47.35	52.65		.57	4.14	69.01	1.32	24.96		6,310	11,358			
			4						4.17	69.40	1.32	25.11		6,333	11,399			

